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REPORT

OF THE

AGRICULTURAL DEPARTMENT IN ASSAM

For 1885-86,

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OFFG. DIRECTOR OF THE DEPARTMENT OF AGRICULTURE, ASSAM.

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REPORT OF THE AGRICULTURAL DEPARTMENT IN ASSAM FOR 1885-86.

No. 1,253, dated Shillong, the 3rd August 1886.

From—B. L. Dampier, Esq., C.S., Officiating Director of Agriculture, Assam.

To—The Secretary to the Chief Commissioner of Assam.

I HAVE the honour to forward herewith the third Report on the work of the Agricultural Department in Assam for the year ending 31st March 1886.

Director's movements

2. The following is a brief account of my movements during the year:—

April 1st to November 7th.—At head-quarters. The following reports, &c., were issued:—

(1) Annual Foreign Trade Report.
(2) " River-borne "
(3) " Cadastral Survey Settlement Report.
(4) " Departmental Report.
(5) Report on Manufactures in Assam.
(6) Note on Cotton.
(7) Quarterly Trade Reports.

November 8th to 10th.—Shillong to Rangia.
Ditto 10th to 26th.—At Rangia, testing the work of the mandals attached to the mauzas which had been cadastrally surveyed in 1883-84.
November 27th to December 3rd.—At Gauhâti. Examined mauzadars' registers; held the annual survey school examination, inspected exhibits for the London Exhibition
December 4th to 11th.—To Sylhet and back to inspect the ornamental screen being prepared for the London Exhibition.
Ditto 12th to 15th.—Visited Tezpur, examined mauzadars' registers; inspected Gabru tahsil; inspected exhibits for the London Exhibition.
Ditto 16th to 19th.—Visited Nowgong; held the annual survey school examination; examined mauzadars' registers; inspected exhibits for the London Exhibition.
Ditto 20th to 31st.—To North Lakhimpur and back to Kokilamukh; examined mauzadars' registers.
January 1st to 2nd.—Visited Dibrugarh; inspected exhibits; examined mauzadars' registers.
Ditto 2nd to 5th.—Went down to Gauhâti.
Ditto 6th to 11th.—At Gauhati. Tested the comparative merits of native and Bibia sugar-mills.
Ditto 12th to 25th.—Visited Calcutta in connection with the London Exhibition, and returned to Gauhâti.
Ditto 26th to February 2nd.—At Gauhâti, making up arrears of office work; visited Rangia for a day.
February 3rd to 14th.—Camping in the nine mauzas cadastrally surveyed in 1883-84, examining the work of the mandals.
Ditto 15th to 17th.—Returned to Gauhâti.
Ditto 18th to 19th.—Visited the camp of the Deputy-Commissioner of Nowgong at Desh Myung, to arrange preliminaries for the cadastral survey of Nowgong next year.
Ditto 20th to 21st.—At Gauhâti.
Ditto 22nd to 23rd.—To Rangia, where the Chief Commissioner inspected the settlement and survey offices.
Ditto 24th to 28th.—Visited Mangaldai; held the annual survey school examination; examined mauzadars' registers.
March 1st.—Went up to Shillong
Ditto 2nd to 31st.—Officiated as Secretary to the Chief Commissioner.

District Annual Reports

3. In accordance with instructions issued by the Chief Commissioner in March 1885, copies of the following sections of the District Annual Reports were due to this office on the 1st May:—

(1) Weather, crops, and prices.
(2) Consumption and production.
(3) Trade and commerce.
(4) Manufactures.

The statement below gives the dates on which they were received (complete):—

From Deputy-Commissioner, Khási and Jaintia Hills,			on 30th April.
"	"	Nowgong	2nd May.
"	"	Goálpára	" "
"	"	Gáro Hills	3rd "
"	"	Darrang	5th "
"	"	Cachar	6th "
"	"	Lakhimpur	10th "
"	"	Sibságar	" "
"	"	Kámrúp	28th "
"	"	Sylhet	31st "
"	"	Nága Hills	7th June.

In 1885 three districts did not complete these sections till June, one not till July, and one not till August, so the improvement in punctuality shown by the above figures is marked.

4. I now take up in detail the headings prescribed for this report in Government of India's Circular No. 54 A., dated the 28th April 1884.

I.—Organisation and Maintenance of Village Records.

A.—Field-books, Rent-rolls, and Leases.

(a) Mauzas cadastrally surveyed.

Correction of Settlement Office papers.

5. The settlement papers (map, *dág chitha*, and *jamabandi*) of the nine mauzas cadastrally surveyed in 1883-84, had been revised during 1884-85, and the year under report was, therefore, the first during which they remained in the hands of the mandals, and were corrected by unprofessional agency. In May 1885 brief rules were issued for the guidance of these mandals. The last of the *dág chithas* and *jamabandis* furnished by the cadastral settlement office reached the Deputy-Commissioner's office on the 18th of April and copying of the *dág-chithas* was finished by the close of the following month. The last of the maps was received from Calcutta on the 3rd of June. But a large number of the maps had arrived, and the whole of the copying of the *dág chithas* was done before the end of May. As the papers of each mandal's circle became complete, the mandal was sent out to record the changes that had taken place since 1883-84. The map and the *dág chitha* supplied by the settlement office showed the state of things as it existed in 1883-84. It was necessary to bring both these papers up to date before the settlement of 1885-86 could be made.

Supervisor kanúngos

6. To supervise the operations of the mandals, and check the accuracy of their work, an agency was introduced which had been till then unknown in the Assam Valley. This was the supervisor kanúngo. The total area cadastrally surveyed amounted to 228·16 square miles. This was divided into two circles as follows :—

The Borigog circle	Borigog	99·82 square miles.
	Pubpár	
	Upar Barbhag	
The Khata circle ...	Panduri	128·34 " "
	West Kachári mahál.....	
	West Bonbhag.....	
	East "	
	Khata	
	Batasgila	

A supervisor kanungo (on Rs. 35 a month with Rs. 5 horse allowance) was placed in charge of each. The men selected had had considerable experience as munsarims while the settlement office was preparing the papers, and it was believed they would be able to keep the mandals from going astray in the performance of the new duties they were called on to carry out.

Settlement of 1885-86.

7. The regular settlement of the nine mauzas was not completed until September. Owing to unavoidable delay in the receipt of the maps of some villages, it was found impossible to finish in all cases the revision of the papers, and the regular settlement of 1885-86 was, therefore, of

necessity made upon data a part of which was somewhat obsolete. The actual figures of this settlement compare as follows with those made in the preceding years:—

	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Regular settlement.	92,674	93,267	105,705	107,488	108,544	109,750	112,877	114,379	113,301	110,627	121,775
Supplementary.	523	1,522	829	583	896	448	1,039	315	507	2,947	1,168

Apparent discrepancy.

8. The increase here shown amounts to a rise of 8·25 per cent. This differs slightly from that shown in paragraph 25, as in the latter the calculation is based on the cadastral settlement papers as they stood before being handed over to the mandals, whereas in the preceding paragraph the mandals' corrections, after examining the fields in 1885, have been taken into account.

First testing in the nine mauzas.

9. In November I went to the nine mauzas and, getting all the mandals together, I examined separately the work of each man. I found in a number of instances that no corrections had been made, and in others that the corrections were so only in name. This result was neither unexpected nor unnatural. The system which was being introduced was as new in its principle as unfamiliar in its details. It had never been the custom for a mandal to go over the whole of his circle correcting his *dág chitha*. He had now to do so, and this was the new principle. He had never before had a map in his hands, and the system of measurement was different to anything he had ever practised. These were the unfamiliar details. Many mandals had recorded the crops of the previous year when making copies of their *dág chithas*, and had not altered them to correspond with the changes in cultivation. The greater part of the new lands taken up for cold-weather sowings had not been mapped, and as it was necessary that this should be done without further delay, I began taking out the mandals daily to show them practically what they were expected to do. Each mandal in his turn worked at correcting a map and *dág chitha* before me, and as each was found to have learned the system he was sent off to his circle. All the thirty-one men thus passed a sort of examination, and were told that their papers would be again examined later in the year.

Second testing in the nine mauzas.

10. I had intended not returning to the nine mauzas till the end of the cold weather. But circumstances rendered it advisable I should go there in February. I accordingly spent the first half of that month examining the work that had been done during my absence. I found that most of it was unfinished, and a good deal of it carelessly done. Some of the maps had, however, been admirably corrected, and it became abundantly evident that want of will, and not want of ability, on the part of the mandals had prevented most of their papers from being made equally accurate.

Size of the mandals' circles.

11. The one real difficulty that some of the mandals had to contend against was the size of their circles. In one mauza, Pubpar, which had been amalgamated with the Pati Darrang tahsil, the circles were reasonable in extent, and it was not surprising that the best work in the surveyed area should be found there. But the circles in the adjoining mauza of Panduri were some of them beyond the capabilities of the ablest mandal. In one the total area was 11,624 acres, or over 18 square miles, and the cultivated portion measured 6,989 acres. One circle in Borigog comprised villages covering 9,118 acres, or over 14 square miles, with a cultivated area of 7,756 acres. In the North-Western Provinces the average amount of cultivation in a patwari's charge is under 1,300 acres. It is manifest that the examples given above of the size of some of the Kámrúp circles disclose a state of things which cannot be allowed to exist, if the mandals are to be expected to keep their papers properly up to date. A scheme for improving the position of the mandals, adding to their numbers, and reducing the average area of the circle, has been sent up to the Local Government, and is now under consideration.

(*b*) *Mauzas not cadastrally surveyed.*

Mauzadars' papers.

12. During the year under report I inspected mauzadars' records at Gauháti, Mangaldai, Tezpur, Nowgong, Dibrugarh, and North Lakhimpur. My visit to Calcutta and the cutting short of my tour at the end of February upset the programme originally laid out, and prevented

me altogether from visiting the Sibságar district. In last year's report an account was given of the difficulties experienced by mauzadars in keeping up their papers since the introduction of the system of periodic leases. To mitigate these difficulties a few simple supplementary rules were issued in the early part of the year under report. The most important change then introduced was the division of the *dág chitha* or field-book into two parts to correspond with the two parts of the *jamabandi*. The fields annually settled were separated in the *dág chitha* from those periodically settled, the former being entered in a volume, different from that which contained the latter. By this means the numbers of the fields in the annual *jamabandi* were made to correspond with the numbers in the annual *dág chitha*, and those of the periodic *jamabandi* with those of the periodic *dág chitha*. It proved impossible, however, to carry out the proposed change in all districts, as the papers of some mauzas had been prepared and the settlements concluded before the rules could issue.

Details as to districts.

13. The following notes give the main facts about the papers at each of the places visited :—

Gauháti.

The supplementary rules had been carried out in the papers of 1885-86, with some few exceptions. The *dág chitha* had been divided into two to correspond with the annual and periodic *jamabandis*, and the numbers of the fields in the latter corresponded with those of the former. The total area of each *dág chitha* did not, however, agree with that of the corresponding *jamabandi*, as should have been the case. This was because leases had been issued according to mandals' circles and not according to villages. Thus, when a man held land in two villages situated in the same mandal's circle, he received but one lease, and all his land was recorded in the *jamabandi* of that village which contained most of the holding. But the *dág chitha* of each village showed the fields of that village only, consequently, the total area would not necessarily agree with that of the corresponding *jamabandi*. The names had not been alphabetically arranged in the *jamabandis*, but the kanúngo explained that this was being done in preparation for the next year's papers. In other respects the supplementary rules had been carried out.

Tezpur.

The *dág chithas* had all been divided into two parts, one showing fields annually settled, and the other those for which periodic leases had been issued. The numbers were properly arranged in a separate series in each. Those of the annual *dág chitha* corresponded with those of the annual *jamabandi*, and the numbers of the periodic *dág chitha* with the numbers of the periodic *jamabandi*. In Kámrúp, the unit was, we have seen, the mandal's circle, but the *dág chithas* and *jamabandis* were arranged separately by villages. In Darrang the unit is the mauza, but the *jamabandis* and *dág chithas* are arranged by mandals' circles, village boundaries being unknown. Consequently, as in Kámrúp, the total area of the *dág chitha* of a village did not always agree with the total area of the corresponding *jamabandi*, although the total area of all the *dág chithas* of a mandal's circle did agree with the total of the corresponding *jamabandis*, so in Darrang the total area of a mandal's *dág chitha* did not always agree with that of his *jamabandi*, although the total of the *dág chithas* of a mauza did agree with that of the *jamabandis* of that mauza. In other words, the rule which directs that if a *paitadar* has land in more than one mandal's circle, he must receive a separate *patta* from each mandal for the land occupied within his circle, has not as yet been carried into effect in Darrang.

The totals of the crop abstract agreed in all cases tested with the final page total at the end of each *dág chitha*.

Nowgong.

The supplementary rules have been carried out, and each *dág chitha* divided into an annual and a periodic part. The arrangement is somewhat peculiar. Instead of the books of each mandal forming four separate volumes,—(1) an annual *dág chitha*, (2) a periodic *dág chitha*, (3) an annual *jamabandi*, (4) a periodic *jamabandi*,—all the books of each kind for each mauza are bound up together. Thus, there are four volumes for each mauza, each volume containing all the books of the same kind belonging to all the mandals of that mauza. The periodic *dág chithas* were correctly arranged, all fields settled for ten years coming first, then those settled for nine years, then those settled for eight years, and so on. After each group, the page totals and abstract for that group were duly shown.

The crop statement is given at the end of the periodic *dág chitha* for each mauza. The field numbers are not continuous in one series through all the mandals' circles in a mauza, but begin afresh as they should, from No. 1 for each mandal. In the periodic *jamabandi* the names have been alphabetically arranged.

North Lakhimpur.

Here the supplementary rules have not been carried out at all, and the papers are generally in a very backward state. As an instance, the fact may be mentioned that measurements are recorded in *nals* or lengths of 12 feet. The reason given was that many mauzadars have no chains, and decline to purchase them on account of the cost, more especially as they consider a bamboo pole twelve feet long quite good enough to measure with. The fact is that the mauzadars and mandals of Lakhimpur are considerably behind, in intelligence and education, their brethren in other districts of the province, and it will take a somewhat lengthy period before they rise to even the present low standard of men of their class in other parts of the valley of the Brahmaputra.

Dibrugarh.

The remarks made above with reference to North Lakhimpur apply to a great extent to Dibrugarh. The supplementary rules have not been carried out except experimentally in one mauza. The state of things which those rules were mainly designed to prevent, *viz.*, the confusion as to the identity of the fields settled on periodic leases, has come to pass in the papers of the Lakhimpur sadr sub-division. The periodic leases were given out in 1883. The numbers for the fields, as entered on the leases, were the current *dág chitha* numbers of 1883. These leases are, of course, still in force. But the *jamabandi* of 1885 shows only one number for each field, and this is the current *dág chitha* number of 1885, and different, therefore, from that of 1883. The *dág chitha* of 1885 shows two numbers for each field, one the current number for 1884 and the other the current number for 1885. Consequently, the latter agrees with the *jamabandi*, but neither corresponds with the number entered on the lease. The result is that the field numbers entered on the lease are no longer those by which the fields are known in the *dág chitha* or the *jamabandi* of the current year. The new rules will, it is hoped, rectify this when they are introduced next year.

Mangaldai.

The papers here were in considerable confusion. An attempt had been made after a fashion to carry out the supplementary rules, but the method adopted by the mandals was as slipshod as the result was unsatisfactory. Instead of marking off in the *dág chitha* of 1884 all the periodically-settled fields that had not been resigned, and copying out afresh the entries respecting them to form a new periodic *dág chitha* for 1885, the mandals simply scored through all the resigned and annually-settled fields in the *dág chitha* of 1884, and re-numbered the remainder, altering the totals to correspond with the changes made. The result is a series of *dág chithas* grievously full of corrections and erasures, and almost unintelligible, owing to the want of sequence in the numbers.

This want of sequence is due to the attempt to carry out the rule directing all fields settled for ten years to be shown first, then those settled for nine years, and so on. Consequently, each mandal has numbered all the decennially-settled fields from one to the last number of the series, then he has continued the series with the fields settled for nine years, and shown next those settled for eight years. The fields settled for nine and for eight years are entered at the close of the original *dág chitha* of 1884, but the numbers there given to them are recorded also in the body of the *dág chitha*, wherever the fields may occur. The rule directing leases to be issued in accordance with mandals' circles has been carried out, and has led in some mauzas to an increase in the total number of the leases, as by the old custom a *pattadar* never received more than one lease unless his land lay in more than one mauza. The crop statements were, as usual, only approximations to the truth, but the arrangement of the Mangaldai papers brings into striking prominence the errors they generally contain. When formerly the *dág chitha* was prepared afresh every year, a large portion of the entries for one year was copied *verbatim* into the register for the following season, and amongst these were the entries for crops. Where new land was taken up, the new *dág chitha* would show new crops, but elsewhere the old entries were retained. But as the *dág chitha* was a freshly-prepared one, there was no appearance of

error. Not so with the Mangaldai *dág chithas* of 1885. The original crop entries of 1884 remain with reference to all periodically-settled fields, and it becomes apparent that the changes which may have occurred in actual cultivation are not all reproduced in the crop statement. The actual extent of this error is not, however, as great as it at first sight appears. Changes in the crop are not as common in Assam as in other parts of India, because rice is the main staple, and land adapted for its cultivation (more especially *rupit, i.e.,* land generally used for transplanted rice) is suitable for little else. Again, the small fragments of garden cultivation around each homestead are not separately shown in the returns, as they are too minute to be individually measured and recorded, and are therefore all grouped under the generic term "*basti.*" Thus, it is evident that the bulk of the crop changes can occur only on what are known as *faringati* lands, that is, roughly speaking, land growing anything except garden crops and transplanted rice. And as it is principally *faringati* lands that are resigned and taken up annually, and we have seen that the crops on these are correctly recorded, it follows that the actual error of the crop statement is probably not very great.

General conclusions.

14. On the whole, then, it may be said that the supplementary rules have started as fairly as it was possible to expect, considering the agency in existence to carry them out and the late period of the year at which they were issued. The most important change introduced, that of the division of the *dág chitha,* was carried into effect over the greater part of the valley and, although many minor points were disregarded, still it is believed that another step has been taken in the direction of the improvement of the mauzadars' papers.

B.—Mauzadars' Measurements.

Testing of measurements.

15. The following statement gives details as to the amount of testing done in each district of the measurements recorded by mauzadars:—

Statement of testings of Mauzadars' Measurements.

District	1884-85.					1885-86.				
	Area shown by mauzadars.	Area as tested.	Percentage of errors in mauzadars' area.			Area shown by mauzadars.	Area as tested.	Percentage of errors in mauzadars' area.		
			Excess.	Deficiency.	Net.			Excess.	Deficiency.	Net.
	Acres.	Acres.				Acres.	Acres.			
Goálpára	4,033	4,470	1·66	12·49	—10·63	9,807	10,071	3·32	6·01	—2·69
Kámrúp	8,354	8,692	2·27	6·32	—4·05	7,736	7,699	1·64	1·16	+0·48
Darrang	1,878	1,941	1·54	4·90	—3·36	4,658	4,882	1·97	6·78	—4·81
Nowgong.....	10,791·19	11,046·02	3·06	5·41	—2·35	6,025	6,032	2·45	2·34	+·11
Sibságar	9,769	9,817	1·2	1·8	—0·6	8,565	8,664	1·2	2·3	—1·1
Lakhimpur	10,959	11,309	·94	3·89	—2·95	1,286	1,551	1·78	22·39	—20·61
Total	45,775·19	47,275·02	.....	.....	.....	38,077	38,899	.....	.....	.....
Average	.....	.....	1·73	5·80	—4·02	.....	.....	2·06	6·83	—4·77

Errors in districts.

16. The actual area tested was less somewhat than that tested in the previous year, but the result was almost the same. Lakhimpur comes out worst, and Kámrúp best from the above test. The area examined in Lakhimpur was, however, small, and cannot be taken as a good criterion of the rest of the district. In Kámrup, the presence of the cadastral survey party, no doubt, had a beneficial effect, even in those mauzas which did not come within the scope of its operations. This was so, because the mauzadars could not tell which mauzas would come under survey and which would not, and they knew that concealed cultivation and inaccurate measurement would become things of the past wherever the flags and plane-table of an amín were planted. Each, therefore, to save himself, endeavoured to correct his papers as much as possible, and the natural result was the small percentage

of error found in the measurements of Kámrúp. The net result of the testings of 1883-84 showed a deficiency of 2·87 per cent. in the mauzadars' measurements. It is probable that the figures for the last two years (—4·02 and —4·77 per cent.) are nearer the truth.

Extent of error.

17. The error in question seems small, and, considering the rudeness of the methods of measurement, the inaccuracy of the implements employed, the stupidity and indolence of the agents engaged in the work, and the extreme difficulty of careful supervision and extensive testing, it is perhaps surprising that it is not greater. But the loss to Government is considerable. If we assume that the discovered error represents fairly the amount of inaccuracy in the mauzadars' papers all over the Assam Valley, we find that there is an annual loss of certainly more than 4 per cent. The mean error, according to the figures of the past two years, is 4·39 per cent. But this refers to actual measurements only. The loss of revenue when errors occur in measurements of homestead lands is double that which occurs when mustard fields, for instance, are wrongly recorded. Errors of classification also creep in. Land that ought to be homestead and assessed at Re. 1, or that should be *rupit* and assessed at 10 annas, is classed as *faringati* and assessed at 8 annas per *bigha*. Losses of revenue due to these causes are not included in the estimate of 4·39 per cent. It is not, therefore, too much to assume that the loss of revenue over the Assam Valley due to inaccuracy is not less than 5 per cent. But the total land revenue proper of the Assam Valley amounts to Rs. 28,00,000 in round numbers. Therefore, the annual loss is Rs. 1,40,000.

Testing agency.

18. It is comparatively easy to indicate the cause of error, but it is difficult to point out the remedy. As stated in last year's report, amíns and selected mauzadars have been tried and found wanting, and the work of testing is beyond the powers of a Deputy-Commissioner. Sub-Deputy-Collectors are on their trial now, and it remains to be seen whether the expectations formed of them will be realised. The following statement shows the area measured by Sub-Deputy-Collectors and by officers other than Sub-Deputy-Collectors:—

Name of district.	By Deputy-Commissioner.	By Assistant-Commissioner.	By tahsildars.	By mauzadars and amins.	By district surveyors.	Total area measured by officers other than Sub Deputy-Collectors	Area measured by Sub Deputy-Collectors
1	2	3	4	5	6	7	8
Goálpára	.....	.....	.....	.....	7,660	7,660	2,411
Kámrúp	1,108	.....	1,672	4,919	.....	7,699	.....
Darrang	7	188*	398	1,954	.....	2,547	2,335
Nowgong	.....	456	.....	.....	.....	453	5,579
Sibságar	21	711	.....	5,698	825	7,255	1,409
Lakhimpur	143	139	.....	253	853	1,388	163

* This includes measurements made by the Extra-Assistant-Commissioner of Tezpur.

C.—Survey Schools.

Number of Survey Schools.

19. The seven survey schools maintained during 1884-85, at Gauhati, Mangaldai, Tezpur, Nowgong, Jorhát and Sibságar, were not all kept up during the year under report. The schools at Mangaldai and Jorhát were started at the desire of, and paid for by, the mandals of those sub-divisions. The others were purely Government institutions. But during 1884-85 the Jorhát School had not proved a success, and it was in consequence abolished in May 1885. The Tezpur School was also done away with later in the year (1st October 1885), but in its place the support of the Mangaldai School was assumed by Government, the mandals being relieved from the necessity of subscribing further for it. This alteration was made because very few mandals remained in the sadr sub-division of Darrang who had not either passed through the school or been exempted, and there were still a good many in Mangaldai who were bound to obtain certificates.

Statement showing the working of the Survey Schools during 1885-86.

Name of school.	Average daily attendance.	Mandals. Total number.	Mandals. Number exempted.	Mandals. Passed term examination during the year.	Mandals. Passed annual examination during the year.	Mauzadars. Total number.	Mauzadars. Number exempted.	Mauzadars. Passed term examination during the year.	Mauzadars. Passed annual examination during the year.	Candidates. Passed term examination during the year.	Candidates. Passed annual examination during the year.	Total number passed during the year.	Total cost of each school.	Total receipts of each school.	Net cost of each school (being total cost, minus total receipts).	Average cost of each passed pupil on net cost.	Men with second-class certificates on 31st March. Mandals. 1885.	Mandals. 1886.	Mauzadars. 1885.	Mauzadars. 1886.	Candidates. 1885.	Candidates. 1886.	Men with first-class certificates on March 31st. Mandals. 1885.	Mandals. 1886.	Mauzadars. 1885.	Mauzadars. 1886.	Candidates. 1885.	Candidates. 1886.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
													Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.												
Kámrúp—																												
Gauháti Survey School(a)	20·69	270	7	34	3	41	...	...	...	8	...	45	1,240 13 4	146 0 0	1,094 13 4	24 5 3	91	119	3	3	27	28	3	8	...	...	3	4
" Cadastral Survey School (a).	12·86			15	1			...	...	6	1	23	237 9 8	80 4 0	857 5 8	37 4 5												
Darrang—																												
Tezpur Survey school(b).....	10·00	175	19	6	...	47	7	...	...	8	...	14	342 13 6	62 0 0	280 13 6	20 0 11	44	70	4	10	15	12	4	9	...	1	3	2
Mangaldai "	16·10			22	4			4	...	15	1	46	582 12 9	395 4 0	187 8 9	(g)												
Nowgong "	28·06	187	...	23	8	44	12	...	...	2	1	34	629 3 1	89 6 6	539 12 7	15 14 0	43	65d	5	7	8	10	2	10	1e	1	...	1
Sibságar—																												
Sibságar "	19·10	211	...	8	3	57	12	4	...	...	2	17	679 1 6	2 0 0	677 1 6	39 13 3	15	26	...	12	2	2	...	3	...	...	3	3
Jorhát " (c).....	...			3	...			...	...	1	...	4	.....	.....	(f)	(f)												
Total	17·80	843	26	111	19	189	31	8	...	40	5	183	4,412 5 10	774 14 6	3,637 7 4	.....	193	280	12	32	52	52	9	30	1	2	9	10

(a) Two teachers. The other schools have only one teacher.
(b) Closed on 1st October 1885.
(c) Abolished on 9th May 1885.
(d) Exclusive of 8 mandals, whose certificates have since been cancelled.
(e) Exclusive of one mauzadar, whose ditto ditto ditto ditto.
(f) Figures not available.
(g) As the school was supported by the mandals until October 1885, the total cost to Government of each pupil cannot be ascertained.

Working of schools

20. The statement on the opposite page gives full details as to the working of the schools during the past year, and compares the results with those of the preceding twelve months.

The average of daily attendance was best at Nowgong. This was largely due to the close and careful supervision of the Deputy-Commissioner, Mr. Driberg, who took care to arrange for a fresh batch of mandals to take the place, without any delay, of those who left the school each term. The Gauháti schools laboured under a disadvantage in that the cadastral survey took away a number of mandals who would otherwise have been available, and thus considerably hampered the Deputy-Commissioner in his efforts to keep up the attendance. The Mangaldai School stands first in point of the total number of pupils who passed from it; but this was mainly due to the large number of candidates (pupils who were not mandals or mauzadars) who were successful. Candidates are generally more intelligent than mandals or mauzadars, and it is therefore comparatively easy for a teacher to pass them. The difference between the numbers of passed men on 31st March 1885 and that of those on the district lists twelve months later is not always equal to the number of those who passed during the year. The latter is generally in excess of the former, as in Kámrúp. Where this is so, the reason is that certain certificated mandals and mauzadars have died or been dismissed. When the number of men passed during the year is less than the difference above referred to, as in Sibságar, the reason is that passed candidates from the same or other districts have been appointed mandals or mauzadars.

Discrepancy.

21. The total expenditure differs by Rs. 357-4 from that given in the statement in paragraph 98, because the latter shows only the sum debitable to Government, whereas the statement on page 8 includes in its receipt, and therefore in its expenditure, the amount (Rs. 357-4), which was spent on the Mangaldai Survey School, while supported (till 1st October 1885) by het mandals themselves.

Rewards and fines

22. The following statement shows the rewards given to and the fines imposed on the teachers during the year under report. These figures are included in columns 14 and 15 of the statement on the preceding page.

The Sibságar school comes out very badly from this test :—

1	2	3	4
Name of school	Amount of fines inflicted during 1885-86.	Amount of rewards given during 1885-86.	Remarks.
	Rs. As. P.	Rs.	
Gauháti Survey School	11 8 0	60	
" Cadastral Survey School	10 8 0	52	
Tezpur " Survey School	5 0 0	...	Transferred to Mangaldai on 1st October 1885.
Mangaldai " "	.....	46	
Nowgong " "	17 0 0	50	
Sibságar " "	55 0 0	...	
Jorhát " "	.....	...	Closed on 9th May 1885.
Total.....	99 0 0	208	

Survey schools in the interior

23. After the term examination of December 1885, an attempt was made to send three of the survey schools out into the interior of their respective districts. It was a tentative measure, but it was hoped that the mandals would learn more from the actual survey of a fairly extensive area, and the preparation for it of a map and field-book, than from the casual survey of small isolated patches of ground in the immediate neighbourhood of the sadr station. The three schools selected were those at Nowgong and Mangaldai, and one of those at Gauháti. The Nowgong school never went into the district at all. Difficulties were raised by the teacher, and the Deputy-Commissioner's constant absence in camp prevented the matter being disposed of till the season was too far advanced to allow of anything being done. The Mangaldai teacher contrived to obtain permission from the sub-divisional officer to survey a mauza adjoining the sadr station, and consequently never left his home. This would not have mattered if the survey had been carried out. But it was only half done, and no field-book was prepared. At Gauháti, the Deputy-

Commissioner, Mr. Campbell, with much judgment, directed the school to survey the lands of a *nisf-khirájdar* who had objected to the previous survey made of his estate. The area actually accomplished was small, but the result was satisfactory, inasmuch as the pupils received instruction of the most practical kind, and the map and field-book they produced enabled the Deputy-Commissioner to decide finally a very troublesome and protracted case. The work done by the Gauháti Survey School shows the advantages of utilising the teacher and pupils in the manner adopted by Mr. Campbell. There are almost always certain to be revenue cases pending, in the decision of which a map of the ground would be of the greatest possible assistance. Or, if there are not, there are always mauzas in every district in which concealed cultivation is suspected. The localities affected by the pending cases, or the suspected mauzas can with much advantage be surveyed and mapped by the mandals' school. The practical training involved in the process is undoubtedly superior to that obtained at the sadr, and the papers submitted by the teacher at the close of the season would probably be of considerable assistance to the Deputy-Commissioner. Arrangements will be made earlier next year for sending all the mandals' schools out into the district, a definite area to be surveyed will be assigned to each, and the work done at the end of the season carefully scrutinized. It is believed that the change will improve the efficiency of the schools, and be of some practical assistance to the District Officer.

D.—Cadastral Survey.

Survey of Kámrúp.

24. The Cadastral Survey Party was engaged during the year under report in surveying the last portion of Kámrúp which is to come within the scope of its operations, and in completing the revision of the area dealt with in 1883-84. A special report is annually published giving in detail an account of the operations of the year. It is unnecessary, therefore, to do more here than briefly refer to the more important facts, and compare the progress made with that of previous years.

Work accomplished.

25. In 1883-84 the survey party broke ground in Assam by surveying an area of 228·16 square miles in the Kámrúp district. Field-maps on the scale of 16 inches to one mile, field-books (or *dág chithas*), and rent-rolls (or *jamabandis*) were simultaneously prepared. In the following cold weather these papers were revised and brought finally up to date, and a new area, amounting to 478·05 square miles, cadastrally surveyed. The preparation of the papers for this area was completed during the hot weather and rains of 1885, and revision finished in the next cold season, when the last portion of Kámrúp which was to be cadastrally surveyed, amounting (roughly) to 460 square miles, was also brought under survey. Therefore, up to date the papers of two separate areas, one extending over 228·16 square miles, and the other amounting to 478·05 square miles, have been finally completed, and the field work of about 460 square miles has, in addition, been brought to an end.

It is interesting to compare the figures for the two completed areas. This is done in the statement below:—

Year.	Total area surveyed in square miles.	Number of villages.	Number of fields.	Average size of field in acres.	Total cost of cadastral survey of area.	Total cost of boundary survey of area.	Total cost of professional revision survey of area.	Cost of settlement of area, including revision.	Total cost of completing area.	Total cost per acre of completing area.	Amount of revenue increase within area.	Percentage of increase within area.	Interest on capital expenditure within area.	Average annual increase of preceding ten years in area.
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15
					Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs.			
1883-84.....	228·16	334	148,489	0·98	61,835 8 0	12,936 1 0	1,142 0 0	23,525 0 0	99,438 9 0	0 10 10	8,350	7·35	8·41	2,244
1884-85.....	478·05	406	287,169	1·66	87,910 15 6	16,066 9 2	1,220 7 0	29,918 1 10	1,35,056 2 3	0 7 0·7	10,492	4·95	7·77	4,127

Results.

26. It will be noticed how much the increase in area has reduced the cost per acre in 1884-85, as compared with 1885-86. The increase in the revenue in the latter year is not very high. It only amounts to 4·95 per cent.; but the expenditure considered as capital yields almost the same interest as that disbursed in 1883-84. The average annual increase is given for each year in column 15. If, assuming that this increment would have occurred in any case, we deduct its total from that shown in column 12, the increase is Rs. 6,095, and Rs. 6,366 for each of the two years. This yields interest at 5·13 per cent. for 1883-84, and at 4.71 per cent. for 1884-85, upon the capital expended in each year.

II.—ANALYSIS OF DISTRICTS, WITH REFERENCE TO SECURITY FROM FAMINE.

III.—SYSTEM OF COLLECTION OF REVENUE AND RENTAL IN PRECARIOUS TRACTS.

IV.—MEASURES OF PROTECTION.

27. Famine is happily unknown in Assam, and there are practically no precarious tracts. Measures of protection are, therefore, unnecessary

V.—AGRICULTURAL EXPERIMENTS.

A.—Crops in General.

Rainfall.

28. The statement below gives details as to the rainfall of the year under report, and compares them with those of previous years :—

District or sub-division.	Average of 5 years ending 1884-85.	Average of 5 years ending 1885-86.	1883-84.	1884-85.	1885-86.
1	2	3	4	5	6
Silchar	123·45	130·01	161·84	117·15	131·64
Hailákándi	114·86	113·04	119·18	107·66	103·83
Gunjong	.....	.....	58·30	48·52	56·72
Sylhet	158·00	162·04	155·27	139·42	173·62
Habiganj	92·81	92·13	84·63	90·37	91·38
Karimganj	150·37	151·41	175·38	121·05	170·97
South Sylhet	.....	.....	119·04	100·34	99·04
Sunámganj	204·87	204·46	204·74	164·02	196·04
Dhubri	84·44	81·35	76·23	64·00	89·16
Goálpára	90·47	82·32	72·21	69·54	79·87
Gauháti	70·18	63·22	62·95	51·05	66·07
Barpeta	103·98	91·93	95·17	59·77	86·24
Tezpur	84·87	73·30	74·46	50·90	66·30
Mangaldai	69·55	68·57	59·71	56·90	84·81
Nowgong	70·10	71·81	73·21	64·58	71·37
Sibságar	94·72	88·44	86·33	77·25	97·64
Jorhát	76·84	80·16	79·12	66·07	91·48
Golághát	66·25	70·39	63·93	74·50	82·59
Dibrugarh	113·36	102·06	107·03	86·35	98·44
North Lakhimpur	130·85	126·99	125·50	122·52	124·08
Shillong	80·32	76·67	71·83	67·44	74·01
Jowai	293·18	283·35	281·08	196·96	313·62
Cherra Punji	371·71	369·58	353·25	298·20	435·12
Tura	115·16	107·64	91·77	88·18	116·91
Kohima	69·61	72·32	76·69	65·58	76·33
Wokha	.....	.....	.....	100·00	102·28

Surma Valley.

29. In the Surma Valley the season, taken as a whole, was an average one. The distribution of the rainfall in Cachar was favourable, although November and December were unusually dry and some damage was caused by insects to the standing rice. This crop, on the whole, was below the average. In some parts of Sylhet, where the distribution of the rainfall was unequal and a plague of insects reduced wide areas of paddy to mere grazing-grounds, it failed altogether. Mustard over the valley generally was an average crop. Sugarcane yielded well in Sylhet, but badly in Cachar.

Brahmaputra Valley.

30. In the Brahmaputra Valley, on the other hand, the rainfall was above the average, and the distribution very favourable. The natural result was an excellent harvest. Winter rice gave a bumper yield in most districts, owing largely to the timely rain in July and August, when transplanting was going on. In the Barpeta and Mangaldai sub-divisions it was the best crop that had been known for many years. Early or summer rice also did well, especially in Darrang. Pulses were not up to the average, mainly owing to want of rain during the cold weather. Other crops were good, with the exception of mustard and jute, which were both below the average of former years.

B.—Early or Summer Rice.

Surma Valley.

31. *Aus* and *boro* are the two main species of early or summer rice grown in the Surma Valley. Both are sown broadcast, the former in February and March, and cut in July and August, the latter (in *bils* or river-beds as the water goes down) in December and January, and cut in April and May.

During the year under report, experiments to ascertain the outturn per acre of paddy, or winnowed but unhusked rice, were continued.

The result is compared below with the figures for the previous four years:—

	1881-82	1882-83.	1883-84	1884 85	1885 86.	Grand Total
Number of experiments	27	54	56	87	76	300
Total area cut in acres	6 50	14 09	14 00	22 75	21 25	78 59
Total crop reaped in lbs	9,210	14,040	18,018	29,727	27,847	98,672
Maximum per acre "	...	...	2,560	3,280	2 520	3,280
Minimum " "	...	...	240	307	240	240
Average	1,417	996	1 289	1,306	1,310	1,258

The averages of the last three years agree closely, and are but slightly above that of the whole period during which experiments have been carried on. But the outturn is not as high as it has been generally supposed to be.

District figures.

32. In the statement below separate figures for *aus* and *boro* as well as for Sylhet and Cachar are compared with those of the previous year:—

	1884-85				1885 86			
	Sylhet,		Cachar.	Total.	Sylhet		Cachar	Total
	Aus.	Boro.	Aus.		Aus	Boro	Aus.	
Number of experiments	47	32	8	87	32	36	8	76
Total area cut in acres	12 75	8	2	22·75	8·	11 25	2·	21·25
Total crop reaped in lbs.	13,329	13,077	3,321	29,727	8,475	16,602	2,770	27,847
Maximum per acre "	2,361	3,280	2,460	3,280	2,501	2,520	1,840	2,520
Minimum " "	307	426	652	307	240	432	976	240
Average	1,045	1,634	1 660	1,306	1,059	1,476	1,385	1,310

In both years the superiority of the *boro* crop is abundantly manifest, the outturn being nearly equal to that of winter rice in the Brahmaputra Valley.

Experiments by superior officers.

33. The majority of the above experiments were carried out by police officers, but a few were made by Sub-Deputy-Collectors and officers above that rank. These are entered in the statement below:—

	Sylhet	Cachar.	Total
Number of experiments	12	8	20
Total area cut in acres	3	2	5
Total crop reaped in lbs.	3,634	2,770	6,404
Maximum per acre "	2,504	1,840	2 504
Minimum " "	240	976	240
Average	1,211	1,385	1,281

The average which results from these presumably more reliable experiments is slightly below that of all the experiments taken together.

Brahmaputra Valley.

34. In the Brahmaputra Valley *áhu* was the crop experimented upon. The number of experiments exceeded that of any previous year. Details are given in the statement below.—

	1881-82	1882-83.	1883-84.	1884-85	1885-86.	Total
Number of experiments	20	...	115	189	241	565
Total area cut in acres	6 04	...	38 17	69 95	85 46	199 62
Total crop reaped in lbs.	5,664	...	52,133	95,896	113,870	267,563
Maximum per acre "	2,468	...	3,007	2,828	3,205	3,205
Minimum " "	139	...	296	241	315	139
Average	937	...	1,366	1,370	1,332	1,340

The average for the year under report tends to prove that those of 1883-84 and 1884-85 were reasonably correct. The agreement between the final average and that of the year under report is singularly close.

35. Details of last year's experiments are given in the statement below for each district in the Brahmaputra Valley and compared with similar figures for 1884-85:—

District figures.

	Goálpára.		Kámrúp.		Darrang.		Nowgong.		Sibságar.		Lakhimpur.		Total.	
	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.
Number of experiments	13	29	36	60	44	57	49	47	24	45	13	15	189	244
Total area cut in acres	3·35	8·25	33·47	17·52	14·54	13·50	15·64	15·84	8·59	14·88	4·15	8·43	69·95	82·40
Total crop reaped in lbs. ...	5,850	12,712	38,568	19,332	19,800	23,653	22,178	27,970	12,490	16,456	6,950	12,828	98,836	1,12,870
Maximum per acre ,, ...	2,776	3,205	2,461	2,541	2,828	2,517	2,680	2,904	2,491	2,269	2,520	2,450	2,828	3,205
Minimum ,, ,, ...	1,000	424	241	215	508	605	501	1,010	216	641	620	993	241	215
Average	1,799	1,530	1,217	1,132	1,363	1,230	1,418	1,742	1,454	1,106	1,538	1,521	1,370	1,112

The highest average was obtained in Nowgong, where the crop was an excellent one.

36. The experiments made by superior officers (*i.e.*, those above the rank of mauzadars and head-constables) were few in number, and indicate a much lower outturn than that obtained from all the experiments taken together. The average is lowered by the figures for Kámrúp, where the selected fields were admittedly below the average.

Experiments by superior officers.

	Goálpára.	Kámrúp.	Darrang.	Nowgong.	Sibságar.	Lakhimpur.	Total.
Number of experiments...	...	15	6	7	...	2	30
Total area cut in acres ...	...	4·96	1·98	2·31	...	·83	10·08
Total crop reaped in lbs ...	...	4,140	2,692	3,846	...	1,613	12,291
Maximum per acre ,, ...	...	1,392	2,517	2,360	...	2,450	2,517
Minimum ,, ,, ...	...	315	726	1,313	...	1,204	315
Average	...	835	1,360	1,665	...	1,943	1,219

C.—Late or winter rice.

37. During the year under report 101 experiments were made with winter rice in the Surma Valley. There are two varieties, known as *aman* or broadcast, and *sali* or transplanted rice. The former is grown on low lands, which can be cropped but once. The grain is coarse and heavy, and eaten only by the poorer classes. As it is sown broadcast, not transplanted, its cultivation is less troublesome and costly than that of *sali*. It yields, moreover, a heavier crop. *Sali*, on the other hand, includes all the finer and better kinds of rice, eaten by the wealthier classes. Its cultivation enables a second crop to be taken off the land, as it is grown on soil lying comparatively high. Although, therefore, it yields less in weight than *aman*, and requires more expensive cultivation, the resulting crop is, weight for weight, far more valuable, and the cultivator finds it to his profit to grow it wherever suitable land can be found. Taken together, the figures for 1885-86 are compared below with those for previous years:—

Surma Valley.

	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.	Total.
Number of experiments	86	49	64	152	101	452
Total area cut in acres	21·5	11·75	16·20	40·83	25·75	116·03
Total crop reaped in lbs.....	40,816	19,094	28,260	74,601	34,997	197,768
Maximum per acre ,, ...	5,764	2,962	3,300	3,550	2,988	5,764
Minimum ,, ,, ...	537	131	436	246	224	131
Average.....	1,898	1,625	1,744	1,827	1,359	1,704

The falling off in outturn is most marked, and is no doubt mainly due to the general inferiority of the crop. The heavy rain of September in Sylhet raised the level of the water faster than the *aman* could grow, and seriously damaged the crop.

38. In Cachar winter rice was a success, and, but for the bad average of Sylhet, the experiments would have shown an outturn per acre little less than that obtained in previous years. This is brought out clearly by the table below:—

District figures.

	1884-85.				1885-86.			
	Sylhet.		Cachar.	Total.	Sylhet.		Cachar.	Total.
	Sali.	Aman.	Sali.		Sali.	Aman.	Sali.	
Number of experiments	38	105	9	152	19	57	25	101
Total area cut in acres	10·74	27·84	2·25	40·83	5·25	14·25	6·25	25·75
Total crop reaped in lbs	14,573	55,858	4,170	74,601	6,056	17,998	10,943	34,997
Maximum per acre ,, ...	2,747	3,550	2,542	3,550	2,988	2,940	2,696	2,988
Minimum ,, ,, ...	393	246	1,271	246	224	336	960	224
Average	1,357	2,006	1,853	1,827	1,154	1,263	1,751	1,359

Experiments by superior officers.

39. The experiments made by officers above the rank of head-constables (in Cachar all the experiments were made by superior officers) bring out results more in agreement with those of earlier years, as the statement below proves:—

	Sylhet.	Cachar.	Total.
Number of experiments	10	25	35
Total area cut in acres	3	6·25	9·25
Total crop reaped in lbs.	4,786	10,943	15,729
Maximum per acre "	2,988	2,696	2,988
Minimum " "	608	960	608
Average	1,595	1,751	1,700

Brahmaputra Valley.

40. In the Brahmaputra Valley, a very large number of experiments on winter rice were made during the year under report, and the average outturn per acre deduced from them is higher than that obtained during any of the previous four years. This is no doubt due to the fact that the crop of 1885 was a remarkably good one all over the valley. In the greater part of Lower Assam (Kámrúp, Mangaldai, and Nowgong) such a rice harvest has not been known for many years. Comparative details are given in the following statement:—

	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.	Total.
Number of experiments	131	229	390	410	395	1,555
Total area cut in acres	37·83	69·30	121·31	144·04	140·24	512·72
Total crop reaped in lbs.	59,853	101,885	183,265	196,756	241,069	782,828
Maximum per acre "	3,456	3,173	4,107	4,150	4,368	4,368
Minimum " "	352	342	124	108	181	108
Average	1,582	1,469	1,510	1,573	1,719	1,527

It is satisfactory to find the nature of the crop in Cachar, Sylhet, and the Brahmaputra Valley so faithfully reflected in the results of the testing experiments made in those parts of the province.

District figures.

41. The statement below shows the number of experiments made in each district, and the average outturn per acre obtained in each:—

	Goálpára.		Kámrúp.		Darrang.		Nowgong.		Sibságar.		Lakhimpur.		Total.	
	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.
Number of experiments	20	33	60	79	188	76	49	34	119	130	24	43	410	395
Total area cut in acres	5·97	10·91	32·2	20·91	43·59	24·84	16·19	17·85	39·14	42·91	6·35	13·79	144·04	140·24
" crop reaped in lbs.	12,107	19,363	32,336	45,698	67,962	47,656	25,805	38,910	46,250	65,867	11,190	24,474	196,756	241,069
Maximum per acre "	3,116	4,090	3,026	2,908	4,150	4,368	3,848	3,790	2,807	2,995	2,711	3,636	4,150	4,368
Minimum " "	108	212	481	381	160	514	340	1,107	328	490	221	181	108	181
Average	2,028	1,775	1,393	1,528	1,540	1,919	1,661	2,180	1,182	1,627	1,610	1,781	1,573	1,719

The Nowgong figures give a surprisingly high, but not by any means incredible, average.

Experiments by superior officers.

42. The number of experiments carried out by superior officers is shown in the statement below:—

	Goálpára.	Kámrúp.	Darrang.	Nowgong.	Sibságar.	Lakhimpur.	Total.
Number of experiments	.....	20	12	8	14	7	61
Total area cut in acres	.....	8·91	3·96	9·26	3·58	1·75	27·46
Total crop reaped in lbs.	.....	13,297	7,642	21,000	6,268	3,184	51,391
Maximum per acre "	.....	2,844	2,831	3,122	2,332	2,960	3,122
Minimum " "	.....	847	1,246	1,573	871	306	306
Average	.....	1,492	1,930	2,268	1,751	1,819	1,871

The average is 1,871 pounds of winnowed paddy per acre, a result considerable higher than that brought out by all the experiments together.

Hill rice.

43. A large number of experiments were also made in the Khási and Jaintia Hills. The results are given in the statement below:—

	Upland rice.				Lowland rice.				Total for four years.	
	1882-83.	1883-84.	1884-85.	1885-86.	1882-83.	1883-84.	1884-85.	1885-86.	Upland.	Lowland.
Number of experiments	15	10	49	19	16	18	35	95	93	164
Total area cut in acres	3·75	2·50	12·25	4·75	4	4·50	8·75	23·75	23·25	41
Total crop reaped in lbs	3,355	1,242	11,365	2,175	6,779	5,171	8,844	22,809	18,157	43,603
Maximum per acre "	1,400	658	1,691	1,004	3,291	1,666	2,419	3,400	1,691	3,400
Minimum " "	471	362	336	40	831	576	369	192	40	192
Average	895	497	929	458	1,695	1,149	1,011	960	781	1,063

The crop in the hills generally was a fair one. Upland rice is more dependent on the rainfall than that grown in the hollows and pockets of the hills, and it is natural, therefore, that the fluctuations should be considerable from year to year.

D.—Mustard.

Mustard.

44. Besides experiments in paddy, the principal crop of Assam, a large number of trial cuttings were made to ascertain the average outturn of mustard per acre.

Brahmaputra Valley.

45. The winter crops of the year in the Brahmaputra Valley were not equal, on the whole, to those sown in the summer. They were, in fact, somewhat below the average, especially mustard, and we find, therefore, as shown in the statement below, that the average for the year falls short of that of previous years:—

	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.	Total.
Number of experiments	47	113	133	209	194	696
Total area cut in acres	13·96	37·42	51·13	68·97	71·77	243·25
Total crop reaped in lbs	4,986	16,914	27,315	37,255	34,202	120,672
Maximum per acre "	960	1,194	1,878	1,116	1,216	1,878
Minimum " "	82	36	74	64	85	36
Average	357	452	535	540	477	496

Surma Valley.

46. In the Surma Valley the crop was an average one, and this fact is borne out by the result of the 35 experiments made:—

	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.	Total.
Number of experiments	21	15	46	33	35	150
Total area cut in acres	5·5	3·83	14·88	10·9	9·83	44·94
Total crop reaped in lbs.	1,523	1,539	6,941	3,975	3,461	17,439
Maximum per acre "	.....	1,069	1,695	943	888	1,695
Minimum " "	.....	164	77	86	123	77
Average	277	401	466	365	352	388

Three-year cultivation rule.

47. Mustard in the province of Assam is rarely grown for more than three years running on the same field, as it is very generally believed that the crop after the third year will not repay the expense of cultivation. To ascertain, if possible, whether this theory is borne out by the experiments, district officers were asked, when forwarding their statements, to record against each experiment whether the field cut was under mustard for the first time, or whether the produce was that of a second or third-year crop. Out of a total of 229 experiments, the records of 180 contained the necessary information as to the age of the field, and results so obtained were tabulated in this office, and are given in detail in the three statements immediately below:—

First-year crop, 1885-86.

	Sylhet.	Cachar.	Total Surma Valley.	Goálpára.	Kámrúp.	Darrang.	Nowgong.	Sibságar.	Lakhimpur.	Total Brahmaputra Valley.	Grand total both Valleys.
Number of experiments	3	6	9	15	29	10	...	12	2	68	77
Total area cut in acres	·75	2·	2·75	5·62	10·96	5·16	...	322	·66	25·62	28·37
Total crop reaped in lbs.	225	624	849	3,476	3,775	2,878	...	1,650	394	12,173	13,022
Maximum per acre "	388	408	408	1,041	666	980	...	1,029	727	1,041	1,041
Minimum " "	208	246	208	230	85	309	...	260	466	85	85
Average	300	312	309	619	344	558	...	512	597	475	459

Second-year crop, 1885-86.

	Sylhet.	Cachar.	Total Surma Valley.	Goálpára.	Kámrúp.	Darrang.	Nowgong.	Sibságar.	Lakhimpur.	Total Brahmaputra Valley.	Grand total both Valleys.
Number of experiments.	3	...	3	10	16	8	...	14	...	48	51
Total area cut in acres...	·75	...	·75	2·81	7·96	5·62	...	3·60	...	19·99	20·74
Total crop reaped in lbs.	205	...	205	1,797	4,129	1,544	..	1,435	...	8,905	9,110
Maximum per acre "	473	...	473	1,029	1,039	666	...	908	...	1,039	1,039
Minimum " "	148	...	148	315	121	138	...	91	...	91	91
Average	273	...	273	640	519	275	...	399	...	445	439

Third-year crop, 1885-86.

	Sylhet.	Cachar.	Total Surma Valley.	Goálpára.	Kámrúp.	Darrang.	Nowgong.	Sibságar.	Lakhimpur.	Total Brahmaputra Valley.	Grand total both Valleys.
Number of experiments.	9	6	15	12	7	8	...	10	...	37	52
Total area cut in acres...	2·25	2	4·25	3·12	2·41	2·94	...	2·74	...	11·21	15·46
Total crop reaped in lbs.	998	652	1,650	977	408	793	...	2,047	...	4,225	5,875
Maximum per acre „	888	645	888	532	290	508	...	1,210	...	1,210	1,210
Minimum „ „	123	141	123	145	91	94	...	202	...	91	91
Average.. „	444	326	388	313	169	270	...	747	...	377	380

As was the case last year, the figures for the Brahmaputra Valley and the averages for the whole Province confirm the truth of the maxim which the experience of generations has taught the cultivators of Assam. In 1884-85 the average outturn of winnowed mustard per acre for a first-year field was (for the Province) 570 lbs., that for a second-year field was 484 lbs., and that of a field under mustard for the third year was 434 lbs. During the year under report the crop was not as good, and the figures are 459, 439, and 380 respectively. The Brahmaputra Valley taken alone gives 475, 445, and 377. The experiments in the Surma Valley were by themselves too few to enable any safe deductions to be drawn. All the Nowgong experiments had to be omitted from the above tables as the necessary particulars regarding length of cultivation were not given in the district returns.

E.—Sugarcane.

Outturn of cane.

48. Experiments to test the outturn per acre of sugarcane were not as numerous during the year under report as they were in 1884-85. Fortunately, however, the decrease was chiefly amongst those made by mauzadars and police officers, whose returns in these very tedious and troublesome experiments are rarely very reliable. Fifteen experiments were made by superior officers, as against sixteen carried out during the preceding cold weather.

Experiments by superior officers.

49. The following statement gives all details as to the experiments of superior officers, and compares them with those of 1884-85:—

Experiments by Sub-Deputy-Collectors and Officers above that rank.

District.	Number of experiments.		Total area.		Total weight of cane.		Total weight of juice.		Total weight of gur.		Weight of gur per acre.		Pounds of juice per 100 lbs. of cane.		Pounds of gur per 100 lbs. of cane.		Pounds of gur per 100 lbs. of juice.	
	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.
Sylhet	...	2	..	·12	....	4,503	....	2,218	....	427	..	3,558	...	51·43	..	9·48	..	18·42
Cachar	5	5	·21	·74	6,924	14,926	2,938	7,068	653	1,043	3,109	1,409	43·05	47·35	9·56	6·99	22·23	14·76
Total Surma Valley.	5	7	·21	·86	6,924	19,429	2,938	9,286	653	1,470	3,109	1,709	42·05	48·30	9·56	7·57	22·22	15·66
Kámrúp	6	3	·37	·63	11,328	16,348	4,949	9,598	1,146	1,759	3,097	2,792	43·68	58·71	10·11	10·76	23·15	18·33
Darrang	..	1	..	·23	..	15,325	....	4,776	....	620	..	1,879	..	35·84	..	4·05	..	12·98
Nowgong	4	4	·48	·51	9,922	11,317	4,003	4,253	688	762	1,571	1,438	40·34	37·58	6·65	6·73	16·44	17·92
Sibságar	1	..	·016	..	817	....	420	....	72	....	4,400	..	51·4	..	8·81	..	17·14	..
Lakhimpur	..	..	..	..	....	....	....	....	....	....	..	..	..	..	..	..	..	..
Total Brahmaputra Valley.	11	8	·880	1·49	22,067	40,990	9,372	18,627	1,876	3,141	2,166	2,108	42·4	45·44	8·50	7·66	20·01	16·86
Total for Province.	16	15	1·076	2·35	28,891	60,419	12,310	28,013	2,529	4,611	2,350	1,962	42·60	46·36	8·76	7·3	20·54	16·46
Total for 1883-84.	20		....		96,373		38,111		7,889		....		39·5		8·18		20·70	

The area experimented upon is larger, and the figures therefore more reliable than those of the earlier year. But, except in the weight of *gur* per acre and the percentage of *gur* obtainable from a given weight of juice, there is but little difference between last year's figures and those of preceding years.

Experiments by inferior officers.

50. Details of the experiments made by mauzadars and police are given in the statement below:—

Experiments by Mauzadars and Police Officers.

District.	Number of experiments.		Total area.		Total weight of cane.		Total weight of juice.		Total weight of gur.		Weight of gur per acre.		Percentage of juice to 100 lbs. of cane.		Percentage of gur to 100 lbs. of cane.		Percentage of gur to 100 lbs. of juice.	
	1894-95.	1895-96.	1894-95.	1895-96.	1894-95.	1895-96.	1894-95.	1895-96.	1894-95.	1895-96.	1894-95.	1895-96.	1894-95.	1895-96.	1894-95.	1895-96.	1894-95.	1895-96.
Sylhet	13	7	2·6	2·58	72,029	94,480	21,308	41,666	3,854	7,305	1,482	2,831	29·58	44·10	5·36	7·73	18·08	17·53
Cachar	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total Surma Valley	13	7	2·6	2·58	72,029	94,480	21,308	41,666	3,854	7,305	1,482	2,831	29·58	44·10	5·36	7·73	18·08	17·53
Goálpára	...	3	...	·99	...	15,107	...	4,906	...	1,101	...	1,112	...	32·48	...	7·29	...	22·44
Kamrup	18	9	3·11	1·71	57,474	28,959	24,140	12,236	4,589	2,066	1,478	1,170	42	46·75	8	7·12	19·05	16·49
Darrang	17	11	2·62	1·52	49,762	26,927	27,029	12,362	4,753	2,114	1,809	1,391	54·12	45·94	9·51	7·85	16·95	17·09
Nowgong	30	7	5·19	·93	78,717	27,748	41,791	11,117	5,292	1,379	1,135	1,485	53·09	40·08	6·28	4·97	14·09	12·40
Sibságar	45	28	4·15	3·61	1,16,938	75,091	55,212	22,456	10,157	3,738	2,425	1,035	47·21	29·95	8·68	4·98	18·39	16·61
Lakhimpur	15	13	1·85	2·34	52,027	43,875	24,048	22,822	3,987	3,910	2,158	1,671	46·21	52·16	7·66	8·91	16·6	17·09
Total Brahmaputra Valley.	122	71	16·92	11·10	354,928	216,707	173,120	85,970	29,318	14,248	1,732	1,283	48·7	39·86	8·26	6·60	16·9	16·67
Grand Total for Province.	135	78	19·52	13·68	426,957	310,187	194,428	127,636	33,172	21,548	1,692	1,575	45·54	41·15	7·7	6·95	17·06	16·88
*Total for 1883-84	60				113,956		59,048		11,081		2,581		51·81		9·7		17·9	

Here there was a decrease in area, but the general agreement between the figures for the two years under comparison is very close.

Final results.

51. The average results of these experiments for the past three years are given below:—

(*a*)—*From Inferior Officers' Experiments.*

(1) The weight of *gur* per acre is 1,671 lbs.
(2) Cane yields 44·77 per cent. of its weight of juice, and 7·73 per cent. of its weight of *gur*.
(3) The juice yields 17·26 per cent. of its weight of *gur*.

(*b*)—*From Superior Officers' Experiments.*

(1) The weight of *gur* per acre is 2,084 lbs.
(2) Cane yields 42·24 per cent. of its weight of juice, and 8·09 per cent. of its weight of *gur*.
(3) The juice yields 19·16 per cent. of its weight of *gur*.

(*c*)—*From all Experiments combined.*

(1) The weight of *gur* per acre is 1,709 lbs.
(2) Cane yields 44·33 per cent. of its weight of juice, and 7·79 per cent. of its weight of *gur*.
(3) The juice yields 17·58 per cent. of its weight of *gur*.

F.—Miscellaneous Experiments.

Outturn of miscellaneous crops.

52. A few miscellaneous experiments to ascertain the outturn per acre of crops other than those already enumerated, were also made during the year under report. Details are given in the statement below, and compared with the figures of previous years.

Crop	Matikalai.									Mung.		Til.	Linseed.	Rajgira.	Jua.	Cotton (uncleaned).		
Year	1884-85.	1885-86.							Total of two years.	1895-96.		1895-96.	1895-96.	1895-96.	1895-96.	1894-95.	1895-96.	Total of two years.
District	Total of Goálpára and Sibságar experiments.	Goálpára.	Kamrup.	Darrang.	Nowgong.	Sibságar.	Lakhimpur.	Total		Kamrup.	Total of Goálpára and Kamrup experiments.	Sylhet.	Sylhet.	Kamrup.		Nowgong.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18
Number of experiments.	22	25	20	12	30	23	10	130	152	13	10	3	2	1		8	4	6
Total area cut in acres	7·03	8·17	6·15	25·5	9·76	8·04	3·3	60·92	67·95	4·33	3·31	·25	·5	·17		·65	1·32	1·98
Total crop reaped in lbs.	2,418	2,993	1,850	16,190	4,674	3,627	1,050	30,694	34,112	993	470	126	135	210		354	449	793
Maximum per acre in lbs.	1,066	529	308	832	1,003	1,131	648	1,131	1,131	750	324	160	260	1,239		511	424	511
Minimum " " lbs.	156	65	124	182	169	148	297	65	65	82	84	80	100	1,032		198	272	272
Average	486	245	317	635	479	488	591	504	502	206	142	126	210	1,235		401	370	401

The average outturn of *matikalai* may be considered fairly well ascertained. So also the outturn per acre of uncleaned cotton. But the experiments in the other commodities have not yet been continued sufficiently long to enable a decided opinion to be expressed.

Experimenting officers.

53. The following statement gives the names of the officers who carried out experiments, with the number and nature of the experiments made by each:—

Serial No.	Name.	Early rice.	Late rice.	Mustard.	Cane.	Linseed.	Matikalai.	Moong.	Cotton.	Total.
1	Mr. J. C. Arbuthnott, Assistant-Commissioner, Jorhát.	...	5	...	...	...	...	...	...	5
2	Mr. W. G. Black, Extra-Assistant-Commissioner, Cachar.	1	1	1	1	..	...	...	...	4
3	Ditto Superintendent of Jail, ditto.	1	1	...	...	...	...	...	...	2
4	Mr. A. E. C. Bolst, District Superintendent of Police, Lakhimpur.	...	5	...	...	...	...	...	...	5
5	Colonel A. E. Campbell, Deputy-Commissioner of Darrang.	...	1	...	...	...	...	...	...	1
6	Surgeon R. N. Campbell, Superintendent of Jail, Tezpur.	...	...	1	1	...	2	...	...	4
7	Mr. F. A. Fullerton, Assistant-Superintendent of Police, Nowgong.	...	2	...	...	...	...	...	...	2
8	Mr. E. A. Gait, Assistant-Commissioner, Nowgong.	1	1	...	...	...	...	...	...	2
9	Captain P. E. Henderson, B.S.C., Assistant-Commissioner, Jowai.	...	12	...	...	...	...	...	...	12
10	Lieutenant C. G. M. Kennedy, Assistant-Commissioner, North Lakhimpur.	1	...	...	...	...	...	...	...	1
11	Mr. A. Porteous, Assistant-Commissioner, Karimganj, Sylhet	2	2	1	...	1	...	...	...	7
12	Mr. A. J. Primrose, Assistant-Commissioner, Mangaldai.	...	3	...	...	...	...	...	...	3
13	Mr. A. F. Steinberg, Assistant-Commissioner, Hailákándi.	1	4	...	...	...	...	...	...	5
14	Babu Akshay Kumar Chatterji, Sub-Deputy-Collector, Sylhet.	5	...	...	...	...	...	...	...	5
15	Munshi Azizar Rahman, Extra-Assistant-Commissioner, Sibságar	...	3	...	...	...	...	...	...	3
16	Babu Choniram Das, Tahsildar, Rangia, Kámrúp.	...	4	...	...	...	...	...	...	4
17	Babu Dakhina Charan Sen, Sub-Deputy-Collector, Cachar.	...	8	5	2	...	...	...	...	15
18	Babu G. C. P. Bhuyan, Sub-Deputy-Collector, Nowgong.	...	...	...	2	...	...	...	...	2
19	Babu Gaur Charan Das, Extra-Assistant-Commissioner, Karimganj,	1	...	...	...	...	...	...	...	1
20	Ditto ditto North Sylhet.....	...	1	...	...	...	...	...	...	1
21	Babu Gunabhiram Borah, Jail Officer, Nowgong.	...	1	1	...	...	1	...	...	3
22	Babu Govind Ram Chaudhri, Tahsildar, Palashbari, Kámrúp.	...	1	1	1	...	1	1	...	5
23	Maulavi Hamid Bakht Mázumdar, Extra-Assistant-Commissioner, Sylhet.	2	...	...	...	...	...	...	...	2
24	Babu Harish Chandra Chaki, Extra-Assistant-Commissioner, Kámrúp.	6	5	...	...	...	...	...	...	11
25	Babu Ishan Chandra Patranavis, Extra-Assistant-Commissioner, South Sylhet.	2	2	...	...	...	...	...	...	4
26	Babu Jagat Bandhu Das, Officiating Tahsildar, Cachar.	...	3	2	...	...	...	...	...	5
27	Babu Jagat Bandhu Nag, Extra-Assistant-Commissioner, Cachar.	1	3	...	1	...	...	...	...	5

Serial No.	Name.	Early rice.	Late rice.	Mustard.	Cane.	Linseed.	Maikalai.	Moong.	Cotton.	Total.
28	Babu Jagat Chandra Das, Extra-Assistant-Commissioner Nowgong.	3	2	...	...	...	2	...	...	7
29	„ Jogesh Chandra Chatterji, Extra-Assistant-Commissioner, Sunámganj.	...	1	...	...	...	...	...	...	1
30	„ Kaliram Chaudhri, Tahsildar, Patidarrang, Kámrúp.	3	1	1	1	...	...	...	...	6
31	„ Kaliram Das, Tahsildar, Dimoruah, Kámrúp.	...	2	...	...	...	..	...	...	2
32	„ Kanti Chandra Mukerji, Extra-Assistant-Commissioner, Jorhát.	...	5	...	...	...	...	...	...	5
33	„ Kedar Nath Sanyal, Extra-Assistant-Commissioner, Sunámganj.	...	1	...	...	...	...	...	...	1
34	„ Komolokanta Bhuiyan, Tahsildar, Chaigaon, Kámrúp.	...	5	...	1	...	...	...	...	6
35	„ Lakshminath Kakoti, Sub-Deputy-Collector, Jorhat.	...	1	...	...	...	...	...	...	1
36	„ Madhub Chandra Bordalai, Extra-Assistant-Commissioner, Tezpur, Darrang.	...	1	...	...	...	...	...	...	1
37	„ Mahim Chandra Chakravarti, Tahsildar, Gabru, Darrang.	6	5	3	...	...	3	...	...	17
38	„ N. C. Biswas, ditto, Cachar...	1	1	1	...	...	...	...	...	3
39	Maulavi Najmul Hussain Ahmed, Extra-Assistant-Commissioner, North Lakhimpur.	1	...	...	...	...	...	...	...	1
40	Babu Nritya Gopal Chatterji, ditto, Cachar.	2	3	1	1	...	...	...	...	7
41	„ Phanidhar Chaliha, Sub-Deputy-Collector, Darrang.	...	2	4	...	...	...	...	...	6
42	„ Prithiram Chaudhri, Tahsildar, Chameria, Kámrúp.	6	...	...	...	...	...	...	...	6
43	„ Prokash Chandra Datta, Sub-Deputy-Collector, Cachar.	1	1	...	...	...	...	...	...	2
44	„ Parsuram Khaund, ditto, Lakhimpur.	...	2	...	...	...	...	...	...	2
45	„ Radhanath Barua, Tahsildar, Barki, Kámrúp.	...	2	...	...	...	...	...	...	2
46	„ Ram Gopal Khan, Extra-Assistant-Commissioner, Goálpára.	...	...	4	...	...	...	...	...	4
47	„ Sambhu Narayan Sing, ditto, Karimganj.	...	3	1	1	...	...	...	...	5
48	„ Sarat Chandra Mazumdar, Sub-Deputy-Collector, Nowgong.	3	2	3	2	...	2	...	2	14

G.—Wheat.

Australian wheat.

54. The box of four maunds of Australian wheat, referred to in last year's report, was sent down in July 1885 to Goálpára, the only wheat-growing district in Assam. The grain was distributed amongst the mauzadars and cultivators of the wheat-growing area, and duly sown, the Deputy-Commissioner states, on carefully prepared land. When the plants were about a foot high, however, they are reported to have withered away for want of rain, and the experiment proved a failure. Some of the seed was retained, and will be tried again next year.

H.—Sorgho.

Sorgho experiments.

55. In continuation of the arrangements made in the previous year, a supply of Sorgho seed was sent to the Deputy-Commissioners of Kámrúp, Darrang, Sibságar, and Lakhimpur. The Deputy-Commissioner of Nowgong had saved a quantity from his former crop, and did not, therefore, require a fresh supply.

Kámrúp.

56. In Kámrúp the experiments failed. The sub-divisional officer of Barpeta reports that the seed refused to germinate. At Palasbari and Choigaon the seed sprouted, but, for some unaccountable reason, the young plants never came to maturity. At the Gauháti Jail the crop grew well, but no statistics were collected, and no attempt at the manufacture of sugar was made.

Darrang.

57. In Darrang, a portion of the seed sent was put down, but it is reported not to have germinated.

Lakhimpur.

58. In Lakhimpur, half the seed was tried in the jail and by mauzadars; none of it appears to have come up. The other half was distributed by the Assistant Political Officer at Sadiya to the Miris, who put it down as directed, but, naturally enough, kept no details of the result. They obtained a crop, however, but did not appear to care for the produce.

Sibságar.

59. In Sibságar, the seed was distributed to tea-planters and others, but in only one instance did it germinate, and the plants come to maturity. As a rule either the plants did not appear above the ground, or, having done so, rotted off. In the one successful instance, although clear instructions were sent with the seed, no attempt was made to extract sugar.

Nowgong.

60. At Nowgong, the seed preserved from the previous year was distributed to mauzadars, and also tried within the precincts of the jail. The mauzadars' results were unsatisfactory and somewhat unreliable, but in the jail 3 kottas 2 lessas (8,928 square feet = ·205 of an acre) yielded 170 lbs. of grain, 4,704 lbs. of stripped stalks and 219 lbs of *gur*. This yield of *gur* was 4·65 per 100 lbs of stalk. Last year the yield was 4·37. The outturn of *gur* per acre was 1,024 lbs during the year under report. In 1884 it was only 738. It is worth comparing these figures with those for cane in paragraph 51. Considering the great difference in cost of cultivation, sorgho ought to be a popular crop; but prejudice is very difficult to overcome, and the ryot regards every new thing with a certain amount of suspicion, not perhaps altogether unreasonable.

I.—Guinea-grass.

Guinea-grass seed.

61. A supply of 10¼ lbs. of Guinea-grass seed was obtained and distributed early in 1885 in the manner indicated below:—

To Deputy-Commissioner, Kámrúp	2	lbs.
„ Deputy-Assistant-Adjutant-General, Shillong	3	lbs.
„ Agent, Rivers Steam Navigation Company, Disangmukh	1¼	lbs.
„ Deputy-Commissioner, Nowgong	4	lbs.

In all the above places, except Nowgong, the experiment proved a failure. In the majority of instances the seed is said to have refused to germinate, but in some, floods prevented the crop from coming to maturity. In Nowgong, however, the seed germinated well, and the outturn was good. An area of 4 kottas 5 lessas of land (12,240 square feet = ·28 of an acre) yielded as a first crop 2,131 lbs. of grass, and three weeks later gave a second crop of 2,055 lbs. The Deputy-Commissioner did not weigh any more of the outturn, but it was clear that about six cuttings at least per annum of 2,000 lbs. each could be made from the area in question, and probably more. This would give an average of 42,857 lbs. of fodder (383 cwt.) per acre per annum. The cost of preparing the land, sowing, and weeding the crop was Rs. 15 on the area above mentioned. This is Rs. 54 per acre. But the cost would not rise quite in proportion to increase of area, as is here assumed.

J.—Potatoes.

Kumaon potatoes.

62. Experiments in 1884-85 were conducted with only two kinds of potatoes, those reared from Kumaon seed and those known as Scotch Champions. During the year under report the balance of the former variety left over for summer sowings of 1885 (130 maunds 33 seers) was utilised as noted below:—

	M.	S.	C.
Consumed in jail	54	9	6
Sold	2	0	0
Resown	57	38	0
Found rotten	16	25	10
Total	130	33	0

The outturn of the summer sowings was 267 maunds or 4½-fold. The officer in charge of the Shillong jail maintains that no sale is to be found for these potatoes amongst the Khásis, and that he finds the greatest possible difficulty in getting rid of them. Out of the 267 maunds, 18 maunds were put down in February to form the summer crop of 1886, 62 maunds 21 seers were sold, 49 maunds 2 seers consumed in the jail, and 137 maunds 17 seers found rotten. No winter sowings appear to have been made in 1885, as they had invariably proved failures. The method recommended in last year's report does not seem to have been carried out in its entirety. The selection of the seed was not done with much judgment and the result was unsatisfactory. This year I have had the selection made under my personal supervision.

Scotch Champion.

63. As reported last year, 30 seers of Scotch Champion potatoes were planted in February 1885. The yield was 2 maunds. Out of this, 20 seers only were found fit to put down early in 1886. It would seem as if this variety of potato was quite unsuited to these hills.

K.—Rheea.

Rheea experiments.

64. A small quantity of rheea was grown in the Nowgong Jail during the year under report. The object of the experiment was double. Details as to the cost of producing the fibre were required, and a comparison between the crop as grown in shade and as grown in the sun was wanted. The second object was quickly gained. The plants put down in the shade refused to grow at all, and were a total failure. The patch grown in the sun, on the other hand, did well. An area 71′ × 74′ (=1*k.* 3*l.*) was planted in the jail garden in the middle of April.

The first cutting yielded 3 seers of dried fibre in July. The second cutting yielded 10 seers 9 chittacks in September. The third cutting yielded 7 seers 4 chittacks in October. Total yield in six months=20 seers 13 chittacks=value (@ Re. 1 per seer) Rs. 20-13. The total cost of planting, cutting, and extracting the fibre was Rs. 13, consequently on an expenditure of Rs. 13 there was in six months a profit of Rs. 7-13. When I saw the crop in the middle of December it was nearly fit to cut, and might safely have been estimated to yield one more crop before the following April. Therefore, five crops might be calculated on from the above data in one period of 12 months. But the produce from three crops was 20 seers 13 chittacks; therefore the produce from five crops would be 34 seers 11 chittacks. (I have allowed for slower growth in the cold weather by only taking one crop between December and April). But the cost of cutting and extracting fibre from one crop was Rs. 2. Therefore, the cost of the two additional crops would be Rs. 4. Therefore, the total expenditure in twelve months would be Rs. 17. Therefore the net profit in twelve months would be Rs. 17-11, or roughly 100 per cent. per annum. Working out the figures for the acre, we see that the weight of fibre obtainable would be 911 lbs. and the cost Rs. 222 per annum.

Calculation unsafe.

65. The above calculation of course applies only to a very small area, and it is exceedingly dangerous to argue from such limited data that profits will necessarily accrue if the undertaking were conducted on a commercial scale. Still, what evidence there is goes to show that rheea is a profitable crop, and there is no doubt that the climate of the province suits it admirably.

L.—Muga Silk.

Uses of the yarn.

66. The silk of the *muga* worm (*Antheræa Assamœa*) has been for some time past gradually attracting more and more attention in Europe. There has been for many years a considerable amount of trade in this silk amongst natives of Assam and Bengal. The yarn is exported to Calcutta, and then sent chiefly to Dacca to be used in the ornamentation of the muslin for which that city is famous. The thread is worked into the borders in very intricate and delicate patterns, and the finished article is often an object of great beauty.

Trials in Europe.

67. But, though well known to natives and largely used by them, *muga* silk has only comparatively recently attracted the notice of Europeans. In January 1885, in pursuance of previous correspondence on the subject, I sent 2·5 lbs. of the best silk yarn I could procure to Mr. Wardle, of Leek, the well-known specialist in silk. A few experiments were made with the small amount received, and Mr. Wardle in March 1885 reported as follows:—

"The silk winds very well, far better than *tusser*, but it is reeled on the small native reel, and, to be of value to manufacturers in this country, it must be reeled on the Bengal reel. The silk is very dirty and foul, and much too coarse to be of practical value in England; but that is the fault of the reeling from the cocoon."

In November 1885, Mr. Wardle, then about to start for India, asked for some bales of *muga* silk yarn to be sent to him for further experiment, and in January 1886 a consignment of 59 seers (121 lbs.) of thread was handed over to him. The total cost of this was Rs. 435-9-3, or an average of Rs. 7-6 per seer. A further report from Mr. Wardle is awaited.

Reeling experiment.

68. Besides the above, other action has been taken by this office in the matter of *muga* silk. In 1884, Mr. Grimwood, then sub-divisional officer of North Lakhimpur, where forests of the *sum* (*Machilus odoratissima*), on which the *muga*-worm feeds, abound, sent a consignment of 6,000 cocoons to Mr. Cleghorn, a gentleman in Calcutta who had taken out a patent for a new silk reeler. Mr. Cleghorn reeled the cocoons, and forwarded a sample to England, but found that the price he received would not re-pay the expense of producing the silk.

Bengal Silk Company.

69. In January 1885 the Bengal Silk Company applied to the Assam Government for a supply, free of cost, of 3 lakhs of *muga* cocoons, with a view to thoroughly test the possibility of placing the thread on the English market at a remunerative rate. The amount required was

despatched, the only conditions made being that a full report should be submitted of the result of the experiment.

Results.

70. In February 1886 the Company reported that the cocoons had been successfully reeled, and that the result was—

	Maund.	Seers.	Chittaks.
Silk	0	32	13
Goodar (a part of the waste)	1	7	14
Topah (ditto ditto)	0	18	6

That is to say, three lakhs of *muga* cocoons yielded 67 lbs. of thread. The produce was sent to London, but in some unexplained manner the bale is reported to have been injured by salt water *en route*, and the Managing Agent of the Company states that up to July 1886 the sample forwarded to England had not been sold. The cost of the three lakhs of cocoons at Rs. 2 per 1,000 was Rs. 600; packing charges raised the total cost to Rs. 610-9-6. Carriage expenses from the Sibságar steamer ghat, *plus* expenses of reeling and forwarding to England, were borne by the Company.

M.—The Habiganj Agricultural Show.

Habiganj Agricultural Show.

71. The annual *melá* was held for the third time at Habiganj in Sylhet, and lasted from the 1st to the 12th January. Judging from the extensive preparations made by traders and the large numbers who arrived before the appointed day, the show seems to have increased in popularity. Unfortunately, however, cholera appeared, and the natural panic that followed not only dispersed rapidly those who had arrived, but prevented many from attending who would otherwise have come. Notwithstanding this, the programme was carried out as far as possible. Exhibits were divided into four classes as before :—

(1) Live stock.
(2) Agricultural implements.
(3) Agricultural produce.
(4) Local manufactures.

The exhibits under No. 3 were much the best, and those under class (4) the most inferior.

Last year the exhibitors were mainly Bengali landholders of the neighbourhood, but this year some of the cultivators themselves were induced to come forward, and prizes to the value of Rs. 169 were distributed. The total expenditure amounted to Rs. 1,429-5-3. The receipts were as follows:—

	Rs.	As.	P.
Balance of previous year	353	9	3
Government grant-in-aid	250	0	0
Voluntary subscriptions	1,051	8	0
Hire of shops and miscellaneous	624	1	6
Total	2,279	2	9

N.—Cane-mills.

Bihia roller mills.

72. At the instance of Mr. A. C. Campbell, Deputy-Commissioner of Kámrúp, who promised to dispose of them, ten of Messrs. Thompson and Mylne's two-roller cane-mills were imported in January. The Bihia firm sent up two men to instruct cultivators in the method of using them, and I arranged for a trial of the mills against the native mill at Palasbari. The trial took place on the 10th and 11th January, in the presence of a considerable number of cultivators. Two Bihia mills were worked against one native mill on both days, and the same quantity of cane (5 maunds) was supplied to each. The statement below gives details as to the result of the trial. I can personally vouch for their accuracy, as all the operations were conducted directly in my presence, and most of the weighments were made with my own hands:—

Kind of mill.	Weight of cane.	Working agency.	Weight of juice.	Weight of megass.	Weight of gur.	Time occupied in crushing.	Pounds of juice per 100 lbs. of cane.	Pounds of gur per 100 lbs. of juice.	Pounds of gur per 100 lbs. of cane.	Percentage of gain in juice of Bihia mill over native mill.	Percentage of gain in gur of Bihia mill over native mill.	Approximate cost of working for 2 hours.
					First day.							Rs. A. P.
			M. S. C.	M. S. C.	M. S. C.	H. M.						
Native mill	5 mds.	8 men, *i.e.*, 6 to turn and 2 to feed.	2 19 7	2 6 8	0 18 3	3 10	49·72	18·60	9·25	.....	.....	0 10 8
Bihia " I.	"	One bullock and 3 boys or men.	3 8 3	1 20 0	0 24 5	3 50	64·09	18·96	12·15	28·90	31·35	0 8 0
" II.	"	Ditto ditto	3 4 11	1 25 0	0 20 4	2 5	62·34	16·24	10·12	25·38	9·40	0 8 3
					Second day.							
Native mill	"	Same as first day	2 26 8	1 39 0	0 23 8	2 45	53·18	21·97	11·37	.....	.....	0 10 8
Bihia " I.	"	A pair of bullocks and 2 men or boys.	3 13 12	1 13 0	0 27 6	2 30	66·87	20·36	13·72	25·74	20·93	0 9 4
" " II.	"	Ditto ditto	3 15 1	1 10 0	0 28 10	3 45	67·83	21·19	14·31	26·38	25·85	0 9 4
Average of native mill	.....	.....	2 22 14	2 2 12	0 20 15	2 57	51·95	20·26	10·31	.....	.....	0 10 8
Bihia mills	.....	.....	3 10 7	1 17 0	0 25 4	2 3	65·21	19·24	12·58	26·75	21·58	0 8 8

73. The time entries, as far as the Bihia mills are concerned, are no criterion of the rate at which they can work, because the bullocks employed had not been trained to go round in a circle, and it was impossible to get any which had. They jibbed, unyoked themselves, lay down, and tried every device to escape the necessity of doing the work. This caused very serious delay, as a great many animals had to be tried. The cane used the first day was ratooned *bogi*, whereas that crushed the second day was planted *bogi*. Hence the difference in the quality of *gur* made, though the weight of cane was the same on each occasion. The *megass* from the native mill on the second day was passed through a Bihia mill, and yielded 25 seers 6 chittacks of juice, which was equivalent to a loss of 19·26 per cent. without reference to the evaporation which must have occurred while the refuse was lying on the ground.

Details of trial.

74. The native mill used in this Province consists mainly of two upright rollers of wood, made to revolve upon each other by a pair of deeply-cut wooden screws. The whole apparatus is clumsy and unwieldy and wasteful in the extreme, but cheap as to its first cost. Its inferiority to the Bihia mill would seem to be abundantly manifest from the above experiments. At the same time, it must be remembered that the particular specimen of the native mill employed was said by competent judges not to be a particularly good one. It happened to be the one which was most easily available, and it may very well be that better ones are in use. Nevertheless it should be recollected that the result of the above experiment is in accordance with all others that have been tried in Assam, and though there may be some difference of opinion as to the degree of superiority of the Bihia mill, there can be none now about the fact.

Native mill.

75. The following statement embodies the results of the above experiments in the form prescribed by Government of India Circular No. 143½A.—77-4, dated the 28th December 1885 :—

Special statement.

Record of Agricultural Experiment in the Province of Assam for the year ending 31st March 1886.

Object of experiment.	Points in which treatment of Bihia mill differed from that of ordinary native mill.	Results, native mill.			Results, Bihia mills.			Percentage of gain		Cost of working for period of experiment.	Remarks.
		Pounds of juice per 100lbs. of cane.	Pounds of *gur* per 100lbs. of juice.	Pounds of *gur* per 100lbs. of cane.	Pounds of juice per 100lbs. of cane.	Pounds of *gur* per 100lbs. of juice.	Pounds of *gur* per 100lbs. of cane.	In juice.	In *gur*.	Re. As. P.	
To test relative values of Native and Bihia cane-mills.	(*a*) Bihia mill worked by one bullock and three boys or men.	...	...	...	63·22	17·60	11·14	27·14	20·38	0 8 0	Therefore, the Bihia mills show a saving in working, amounting to 18·75 per cent., and an increase in total outturn amounting to 21·88 per cent.
	(*b*) Bihia mill worked by two bullocks and three men or boys.	...	...	...	67·20	20·88	14·03	26·36	23·39	0 9 4	
	(*c*) Native mill worked by eight men.	49·72	18·60	9·25	...	...	...	...	..	0 10 8	

O.—Ploughs.

76. Nine ploughs of the following three kinds were obtained from the Cawnpore Experimental Station and tried during the year under report:—

Cawnpore ploughs.

Watts' ploughs	3
Kaisar ,,	3
Duplex ,,	3

One of each kind was experimented with in the Brahmaputra Valley, the Surma Valley, and the Khási Hills. A unanimous chorus of disapproval was the response of all the experimentalists. In each case the complaint was the same. The ploughs were too heavy, and therefore unsuited to the cattle of the province; they were too expensive, and therefore beyond the means of the ordinary ryot; they were too

complicated, and therefore, if once broken, past the cultivator's powers of repair. These objections are undoubtedly based on a certain substratum of fact. More than half the ploughing of Assam is done in mud. In the Brahmaputra Valley the area under winter rice, which is planted in mud, is to the area under all other crops as 80 to 57. In the Surma Valley the proportion is probably larger. For this species of cultivation a cutting share is not wanted, and lightness is an essential in the plough. The native plough does not cut, and, being almost entirely of wood, is extremely light. It undoubtedly means less labour for man and beast than any of the improved kinds, when the soil in which it is used is a swamp. For dry cultivation, there can be little doubt that any of the three kinds imported is superior to the native article. But this, though admitted by some of those who have experimented, will have little effect in raising the new ploughs in popular favour. The second and third objections mentioned above would still hold good. The cost is considerably above that of a native plough, and village blacksmiths are more uncommon in this Province than they are in other parts of India. It is not at present apparent, in the peculiar circumstances of the case, how the ordinary native plough can for general purposes be much improved upon.

P.—Forecast of Crops.

Forecast of mustard

77. The first attempt made to issue a forecast of the probable outturn of the mustard crop of the Assam Valley fell through in 1885. The attempt of 1886 was more successful. Mustard is a cold-weather crop, and its export is carried on mainly during the rains, when the rise of the rivers permits boats to penetrate far into the interior of the *chapari* mauzas. Consequently the crop of one year affects the export returns of the next. Therefore the accuracy or otherwise of the forecast, based on the district reports as to the crop of 1885-86, cannot be ascertained until the trade statistics of 1886-87 are compiled in 1887. The district reports were due in this office on 20th January. The following table shows the dates on which finally complete statements were received:—

Nowgong	21st January.
Sibságar.....	26th "
Darrang	28th "
Kámrúp	28th "

The return for the sadr sub-division of Lakhimpur was lost, apparently in the post, for the figures of the North Lakhimpur sub-division alone were received.

Manner of the forecast

78. The forecast was worked out in the following way. The area under mustard in 1883-84 was approximately 117,581 acres. In 1884-85 it was 137,587 acres. In both years the crop was above the average, and we are, therefore, *primâ facie* justified in assuming that the export, which depended on the crop of 1883-84, would bear to the export resulting from the crop of 1884-85 about the same proportion which the area of the former year bears to the area of the latter. But the export of 1884-85 (resulting from the crop of 1883-84) was 7,18,077 maunds (527,564 cwt.), and the quarterly trade returns for the six months ending 30th September (the only returns for 1885-86 which were available in January, when the forecast issued) show that the export amounted to 5,48,137 maunds (402,711 cwt.) It was, therefore, anticipated that the export of the last six months of 1885-86 would amount to about 2½ lakhs of maunds (183,672 cwt.). Figures since obtained have reasonably justified this expectation, for the actuals of 1885-86 show that 7,58,444 maunds (557,221 cwt.) of mustard were exported during that year.

Actual forecast

79. This was the line of argument adopted in making the forecast. The crop of 1884-85 was a 17-anna one (taking 16 annas to represent an average outturn), and the area sown was 137,587 acres. The corresponding export was estimated in January as nearly 8 lakhs of maunds (587,752 cwt.). We have seen that the actuals were 7,58,444 maunds (557,221 cwt.). The crop of 1885-86 was, on the same scale, a 14-anna one, and the area sown amounted to 151,850 acres (excluding Goálpára and sadr sub-division of Lakhimpur). Therefore, it was estimated that the export of 1886-87 would amount to something short of 8 lakhs of maunds, or, say, nearly 30,000 tons.

Q.—Silos.

Ensilage for Assam

80. It is doubtful if silos would be of much use in Assam, as fodder for the greater part of the year is very plentiful all over the Province.

Wet areas

81. Broadly speaking, the whole area of the plains may be roughly divided into two great divisions. One consists of those lands which during the rains are entirely under water. In this would be included large areas in the Surma Valley and all the mauzas known as the *chaparis*

along the banks of the Brahmaputra. Here there is luxuriant fodder during the cold weather, but of course none while the floods are out. Ensilage, therefore, to be of any use, would be required during the rains. But on these water-swept areas dry land during the rains is at a premium, and is required for the houses and granaries of the people. It would be difficult, except in certain places, to find ground high enough above flood-level to permit of silos being constructed. And silos, as far as is at present known, cannot be constructed where the water will rise and saturate the contents.

Dry areas.

82. The second of the two classes of land above referred to consists of those extensive areas which are never covered with water, except in years of unusually heavy floods. Here during the rains the fodder is abundant, but rank and coarse. In January, February, and March, however, there is next to no grazing to be had, and the cattle show by their appearance how much they are in want of suitable food. Here, if anywhere, silos would prove of value. The materials are readily available, and the land is generally sufficiently high. But the pressure of necessity has never yet been felt in a country where immense tracts of culturable land are available to the first comer, and nothing but necessity will drive the indolent Assamese to undertake more than the small amount of labour now requisite to provide him with food, clothing, huts, and opium. This is apparent to the most casual observer, and when we see that the ordinary villager prefers to drink from a foul and polluted tank, rather than take the trouble of going some distance for his water supply or constructing a well, we cannot wonder that he allows his cattle to shift largely for themselves, and neither grows a fodder crop for their maintenance nor makes any effort to preserve the food which at certain seasons lies so profusely around him.

Gauhâti silos.

83. Notwithstanding this, however, a couple of silos were prepared and filled at Gauhâti with *dal*-grass and plaintain-leaves in December. The pits already existed in the side of a small mound, having been formerly used for lime-burning. They answered the purpose fairly well. They will be opened next cold weather, and the results afterwards reported.

Hill tracts.

84. The hills correspond in a great measure to the second of the two classes of lands mentioned above. During the cold season, from say 1st December to 31st March, there is no grass obtainable on the higher plateaux. The cattle are driven down to the lower valleys, where along the banks of streams the grass never entirely fails. Here there is so much grazing available, and the custom is so natural and simple a means of getting over the difficulty of want of fodder, that there would seem to be little or no chance of ensilage being ever used to any extent.

Shillong silos.

85. But at stations like Shillong, where army transport is stationed, the value of ensilage would be very great, and it was with a view to ensilage how far it could be successfully made that two pits were dug in July 1885 and filled with grass. Each pit was circular, and measured six feet in depth by six feet in diameter. The grass for pit No. 1 was cut on the 29th and 30th, and filled in on the 31st. The total weight was 1,301lbs. Three men were employed trampling it down. Boards were then placed on the top and 1,073lbs. of stones. On 2nd August the filling of the silo was finished. Fresh grass had been cut the day before. It weighed 1,111lbs When filled to the top, the boards were replaced and fresh stones weighing 464lbs. added to those used the previous day. Therefore the total weight of grass was 2,412lbs. and that of the stones 1,537lbs. Th was a pressure, without counting the weight of the boards, of 54lbs. to the square f Then earth was piled up on the top until a mound about three feet high in the m was formed. Thus, there was a total pressure of about 250lbs. to the square foot. A thatch roof raised on poles was placed over the whole. This silo was filled in my pr but the second was not. The figures for the latter were reported to be 3,063lbs. of g 3,011lbs. of stones. Earth in the same way was put over the stones, thus producir pressure of about 300lbs. to the square foot. These silos were opened after of the financial year. The results of the experiment will be given in next year

VI.—Cattle-breeding and Veterinar Establishments.

Cattle-breeding.

86. An experiment in cattle-breeding has been started. The cattle i Valley are all of them exceptionally small from experience gained in a former attempt improved breed, it was known that large bulls would inevitably prove a f ments were, therefore, made through the Director of the Department of North-West Provinces to obtain three of the small sturdily-built bulls neighbourhood of the Ken river in the Banda district. The origina purchase of one such animal for every district; but as it was not at accustomed to the dry heat of Banda would stand the moisture of Assa

to import no more than three at first, until it could be seen what effect the change of climate would produce. The three bulls have been stationed at Gauhati, Tezpur and Nowgong. No charge will be made for their services. The following statement shows the total expenditure incurred in importing and locating the bulls:—

	Rs.	As.	P.
Purchase and importation	559	13	0
Sheds	137	11	0
Total	697	8	0

VII.—Agricultural and Fiscal Statistics.

A.—Return XLI B.

Checking of return.

87. The statements that compose this return were checked as usual in this office, and consolidated for the Province. They are due from Deputy-Commissioners on 1st June, and were received on the dates specified below:—

Darrang	24th May
Khásí and Jaintia Hills	26th ,,
Nowgong	29th ,,
Goálpára	4th June
Nága Hills	8th ,,
Kámrúp	11th ,,
Sibságor	11th ,,
Gáro Hills	16th ,,
Sylhet	4th July
Cachar	5th ,,
Lakhimpur	18th August

B.—The District Crop Statement.

Method of preparation.

88. The crop return for the Assam Valley is prepared from the mauzadars' field-books. Each mandal shows for his circle the area under the various crops, and the mandals' returns are tabulated for each district by the Registrar Kanungo. The district statements are checked in this office. Two crop returns in different forms are annually prepared. One is the district crop statement (Statement A of paragraph 89 below). This is forwarded to this office with the sections of the Annual District Administration Report. The other is Form B (Agriculture) of the Annual Statistical Return No. XLI. B. (Statement B of paragraph 89 below). These returns are obviously bound to agree with each other, and one object of the checking in this office is to see that they do agree. In last year's report the original returns, as sent up by district officers, were shown and compared with the figures of the finally checked statements. Details also were given, exhibiting the way in which the figures should have been compiled. This year the errors are so few that it is unnecessary to do more than enter the finally-checked statements, and point out the more important mistakes that were made.

Crop statement.

89. The following are the two statements:—

Statement A.—The District Crop Statement (acres).

2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
[illegible] settled with or revenue-free by [illegible]			Area under cultivation.														
[illegible]	[illegible]	Total.	Tea.	Ordinary crops.	Total cultivated.	Percentage of column 7 to column 4.	Early rice.	Late rice.	Mustard.	Cane.	Pulse.	Other crops.	Bheli.	Fallow.	Total.	Deduct twice-cropped.	Total cultivated area.
[illegible]	[illegible]	72,143	495	65,318	65,813	91·22	13,867	29,676	12,578	28	883	820	4,900	[illegible]	77,762	12,441	65,316
[illegible]	[illegible]	74,388	6,321	607,880	614,201	91·04	146,354	273,828	77,952	5,272	16,075	10,602	44,320	26,799	601,442	83,921	518,521
[illegible]	[illegible]	7,044	18,126	230,411	248,536	69·60	28,700	137,423	3,666	2,503	8,876	20,675	10,927	7,118	224,785	8,409	216,376
[illegible]	[illegible]	602	11,606	245,445	257,052	80·63	68,184	117,454	50,826	5,859	20,395	12,365	14,284	5,721	296,149	50,025	245,124
[illegible]	[illegible]	124	43,622	509,020	552,642	59·75	13,053	205,434	10,737	5,454	7,453	44,449	21,780	28,780	287,040	7,228	279,812
[illegible]	[illegible]	30	27,818	96,136	123,954	48·00	3,029	66,931	2,594	1,631	1,077	4,650	8,458	19,452	117,642	3,986	113,656
[illegible]	[illegible]	[illegible]	107,987	1,554,211	1,662,198	72·28	238,147	840,746	165,353	20,660	54,761	93,624	104,719	87,820	1,653,830	167,124	1,486,706

Statement B.—Form B.—(Agriculture) from Statistical Return No. XLI.B. (acres.)

Name of districts.	Cereal and pulses.					Fibres.									Miscellaneous.					
	Rice.	Wheat.	Other food-grains including pulses.	Oil-seeds.	Sugarcane.	Cotton.	Jute.	Other fibres.	Indigo.	Coffee.	Tea.	Spices.	Other crops.	Food crops.	Non-food crops.	Total area of crops.	Deduct for a cropped area than once.	Cultivated as which crops were grown.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Goalpara	58,543	10	883	12,578	98	..	444	..	..	..	495	66	..	....	5,219	78,257	13,444	65,813
Kamrup	420,342	..	16,075	77,903	3,272	1,015	..	..	..	..	6,921	..	..	....	84,137	589,964	84,821	495,449
Darrang	166,123	..	8,878	8,066	2,503	496	..	..	..	..	18,123	..	..	....	21,001	225,792	8,499	217,293
Nowgong	185,618	..	20,395	50,826	5,952	76	..	..	..	100	11,606	..	..	....	26,471	301,044	50,036	251,008
Sibsagar	218,487	..	7,453	10,737	5,454	106	..	..	..	..	43,622	..	..	....	66,073	351,932	7,720	344,208
Lakhimpur	79,960	..	1,077	2,694	1,481	9	..	..	..	..	27,818	..	..	....	18,099	126,008	3,884	122,022
Total	1,128,893	10	54,761	163,853	20,660	1,722	444	..	..	100	107,987	66	..	....	195,991	1,673,997	167,124	1,506,873

Explanation.

90. The figures in column 2 of Statement A will not invariably agree with those of the Tea Report, as the latter includes only the area settled for purposes of tea cultivation with tea-planters, whereas the former includes the whole area settled with planters for any purpose whatever, and in all cases will be found higher than the latter. The figures of column 5 of Statement A agree with those of column 12 of Statement B and with those of the Tea Report. Column 6 of Statement A will not for all districts agree with column 19, because the former shows, besides the cultivated area in charge of mauzadars, that which has been estimated by district officers as included within the bounds of revenue-free and *nisf-khiraj* estates, and the latter contains fallow, that is, settled but uncultivated land. If the contents of column 16 be for each district deducted from those of column 19, the figure obtained may be equal to that shown in column 6, but will not in any case be found to be greater, and this is as it should be.

Cotton.

91. The area shown as under cotton in Nowgong is far below the truth. The reason is that the figures of Statement B refer only to the tract actually under the management of mauzadars, and included in their annual returns; whereas, nearly all the cotton of Nowgong is grown on the Mikir Hills, where no system of land measurement is in existence, and whence consequently no reliable statistics can be obtained.

VIII.—Trade and Trade Statistics.

Annual reports.

92. Separate reports were, as usual, published during the year dealing with the Foreign Trade of the Province and with that carried by the Brahmaputra and Surma.

Inter-district trade.

93. An attempt has also been made to get some more information than is at present available as to the nature of the inter-district trade. This information promises to be interesting, as the th main divisions of the Province, the Brahmaputra Valley, the Surma Valley, and central chain of hills between, differ so entirely from each other in their natural prod and the requirements of the races that inhabit them.

Inter-district trade stations.

94. Statistics of a desultory kind have always been collected, and each officer has annually dealt more or less fully with of the area in his charge. But during the year ur arrangements were made for collecting statistics regularly from 1st April 18 following places:—

(1) Mahadeo, between Bholaganj in Sylhet and Cherra Punji in the This station would intercept a very large part of the trade carried on betwe the Khási Hills.

(2) Sandia, between Jaintiapur in Sylhet and Jowai in the Jaint station would intercept the bulk of the trade between the plains of Sylh sub-division.

(3) Diyangmukh, on the northern slopes of the North Cachar trade between the North Cachar Hills and the district of Nowgong here.

(4) Kachugaon, on the North Trunk Road, a few miles from the western boundary of the Goálpára district. This registration post should intercept all the traffic entering or leaving Assam from or to Bengal by the main road, along the north bank of the Brahmaputra.

(5) Baida, on the South Trunk Road between Dhubri and Goálpára. This station is intended to intercept all traffic entering or leaving Assam from or to Bengal by the main road along the south bank of the Brahmaputra.

(6) Jagi, in Nowgong.—The registering station at this post was established at the end of 1884, as an experimental station for twelve months. It was continued during the year under report for a further period, which will terminate at the close of the current financial year. The situation of Jagi is admirable for the purposes of trade registration. The registering clerk's hut is built on a high bank terminating in the point where the waters of the Kopili join those of the Kollong. The latter river flows past Nowgong, and collects, through innumerable channels and tributary streams, almost the whole of the trade of the *chapari*, or mustard-growing mauzas of the district. The Kopili brings down large quantities of the cotton and other products of the North Cachar and Jaintia Hills. Its tributary, the Jamuna, taps the Mikir Hills, and some of the traffic of the Khási Hills comes down by the Borpani to the junction of the latter and the Kopili a little above Jagi. Besides these tributaries, numerous smaller and less important streams flow into the Kopili from the south, and carry down at different points the produce of the central chain from the Khási Hills on the west to the Nága country on the east. It is not without some reason, therefore, that it is anticipated that the trade returns of the Jagi post will prove of unusual interest.

Cost of above trade stations.

95. The cost of the above registering stations is very small. The establishment detailed below is maintained at the Jagi post:—

				Rs.
1	Maharrir @ Rs.	35	per mensem	35
1	Peon „ „	6	„	6
2	Boatmen „ „	6 each	„	12
				53

The other registering stations are also police outposts, and constables do the registration work. Thus, there is no expenditure beyond a small sum annually for lighting at Mahadeo and Sandia.

Quarterly trade reports.

96. Quarterly reports dealing with the river-borne trade of the Province were first issued during year under review. These reports consisted of statements giving in figures the details of the trade in each article and of a brief notice summarizing and commenting on the more salient features of the traffic. The notice was in each case published in the local *Gazette*. The information required for these reports is furnished quarterly, for the steamer traffic by the Government of Bengal, and for the boat traffic by the Deputy-Commissioners of Goálpára and Sylhet. The boat trade continues to be registered at Bhairab Bázár on the Megna and Dhubri on the Brahmaputra, where special establishments are entertained for the purpose.

The following table shows the dates on which the quarterly reports were published, and those on which the last steamer return was received from the Government of Bengal. The average interval amounted to 25·5 days. The average interval from the end of the arter reported on was three months and four days (94 days). An effort is being made ecure the publication of the reports before the close of the quarter succeeding that to h each report relates, but as this Administration is dependent on the Government of d for the main portion of the requisite figures, the punctual issue of the quarterly tatement is not altogether within its control:—

ment showing the dates on which the Quarterly Trade Reports were published in the "Assam Gazette" during 1885-86.

me of quarter dealt with in report.	Date on which last steamer return received from the Government of Bengal.	Date on which quarterly report published.
I. (ending 30th June 1885)	9th September 1885.....	10th October 1885.
II. („ 30th September 1885)	15th December 1885 ...	16th January 1886.
III. („ 31st December 1885)	1st March 1886.....	23rd March 1886.
IV. („ 31st March 1886)	10th June 1886	26th June 1886.

ly returns giving details in figures of the foreign trade of the Province are also regularly published in the local *Gazette*, and copies forwarded to the Government of India. Considerable delay e issue of these statements, and the attention of the Local Government

returns.

was drawn to the fact by Resolution No. 52S, dated 5th February 1885, of the Government of India in the Department of Finance and Commerce. The Chief Commissioner had fixed the 15th of the month succeeding that to which the returns relate as the latest date for their receipt in the Secretariat, and a reminder, inviting the attention of district officers to this fact, was, on receipt of the Resolution above referred to, issued early in the year under report. At the same time, arrangements were made in this office for the prompt consolidation of the figures into a provincial statement, and its issue without any avoidable delay.

The result shows that whereas in 1884-85 the average interval between the end of the month to which the return relates and its publication in the local *Gazette* was 42 days, this period fell to 26 days during the year under report. In 1883-84 the interval had been 56 days, or nearly two months. The period between the end of the month and the issue of the return to the Government of India was 62 days in 1883-84, 48 in 1884-85 and 26 in 1885-86. This is clearly brought out by the statement below:—

Name of month to which returns relate.	Date of publication in *Assam Gazette*.			Date of despatch to the Government of India.			District from which last return for the month received during 1884-85.	Date on which last return required from district of preceding column.
	In 1883-84.	In 1884-85.	In 1885-86.	In 1883-84.	In 1884-85.	In 1885-86.		
April	23rd June	14th June	30th May	2nd July.....	28th June	30th May.....	Lakhimpur ..	28th May 1885.
May	26th July	26th July	27th June	31st "	5th August ..	27th June	Goalpara	23rd June "
June	25th August ..	30th August ..	26th July	29th August ..	8th September.	25th July	Lakhimpur ..	20th July "
July.....	8th September.	6th September.	29th August ..	13th September	16th " ..	27th August ..	Goalpara	24th Aug. "
August	10th November	27th " ..	19th September	16th November.	8th October ..	19th September	Sylhet and Goalpara.	15th Sept. "
September ..	17th " .	8th November .	24th October ..	23rd " ..	13th November.	26th October ..	Darrang and Lakhimpur.	15th Oct. "
October	12th January..	29th " ..	28th November	19th January..	6th December ..	25th November	Cachar	19th Nov. "
November	19th " ..	17th January..	2nd January ..	21th " ..	20th January .	31st December.	Sylhet.....	26th Dec. "
December	23rd February.	14th February.	23rd " ..	4th March....	19th February..	23rd January..	Goalpara and Darrang.	18th Jan. 1886.
January	16th March ..	7th March	27th February.	22nd "	9th March	23rd February..	Goalpara	19th Feb. "
February	10th May	18th April	20th March ..	17th May.....	18th April	22nd March ..	Darrang.....	17th March "
March	17th "	2nd May	24th April	27th "	2nd May.....	27th April	Lakhimpur ..	19th April "

IX.—Miscellaneous.

98. The total expenditure incurred during the year under each of the three main heads into which the budget of this Department is divided is shown in the statement below:—

Statement showing the total Expenditure of the Agricultural Department, Assam, during 1885-86.

Description of head.	April 1885.	May 1885.	June 1885.	July 1885.	August 1885.	September 1885.	October 1885.	November 1885.	December 1885.	January 1886.	February 1886.	March 1886.	Actuals for 1885-86.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Director's office.	1,210 10 8	1,258 3 2	1,356 12 10	1,289 0 4	1,267 11 10	1,279 11 7	1,385 15 2	1,251 8 11	1,367 12 4	1,525 5 7	1,503 1 4	1,818 15 2	16,616 12 10
Settlement ..	1,142 12 7	5,069 6 5	3,420 7 5	1,584 12 7	1,577 1 1	1,498 8 7	1,587 11 7	1,823 14 6	1,050 1 0	2,646 5 0	1,698 14 11	1,196 7 6	20,396 11 5
Survey schools..	298 0 0	329 7 8	306 14 0	292 10 7	248 4 11	360 0 0	306 2 8	271 14 1	383 3 0	368 5 7	371 9 6	686 3 9	4,055 10 0
											Grand Total ..		40,068 10

I have the honour to be,

Sir,

Your most obedient Servant,

H. Z. DARRAH,

Offg. Director of Agriculture

Resolution on the Report of the Agricultural Department in Assam for the year 1885-86.

Extract from the Proceedings of the Chief Commissioner of Assam in the Revenue Department, No. 3,657, dated the 5th October 1886.

READ—

The Annual Report of the Director of Agriculture for 1885-86.

RESOLUTION.

Director's movements during the year.

THE Agricultural Department was in Mr. H. Z. Darrah's charge during 1885-86, as during the preceding year. His camping season lasted from the 7th November 1885 to the end of February 1886, when he was summoned to Shillong to officiate temporarily as Secretary. The month of November was spent in the Kámrúp mauzas under cadastral survey; in December Mr. Darrah went on tour in the Assam Valley as far as Dibrugarh, returning to Gauháti in time to visit Calcutta, where there was work to be done in connection with the Indian and Colonial Exhibition of 1886 in London. Mr. Darrah was the officer entrusted with the collection and despatch of the Assam exhibits, and his visit to Calcutta for this purpose occupied the latter half of January. The greater part of February was spent in supervising settlement work in the cadastrally-surveyed mauzas of Kámrúp; and Nowgong was also visited, with a view to preparing matters for the introduction of the cadastral survey into that district.

Village records in cadastral mauzas.

2. The year 1885-86 was the first year in which a settlement was made on cadastral results. The tract settled was one of 228 square miles, comprising nine mauzas in the northern part of Kámrúp, which had been surveyed in the season of 1883-84. In May and June 1885, the cadastral maps and field-books were made over to the mandals, who proceeded to correct them so as to bring them into conformity with the actual state of things in September 1885. The regular settlement thus concluded amounted to Rs. 1,21,775, against Rs. 1,10,627 in the preceding year, and a maximum of Rs. 1,14,379 in the ten years preceding. This increase was largely due to the cadastral survey. The maps and field-books (*dág chithas*) in these nine mauzas are to be kept up to date annually in accordance with rules issued to the mandals in May 1885. Two supervisor canungoes have been appointed for the two circles into which the tract has been divided, and a beginning has thus been made towards complying with the wishes of the Government of India, as regards the creation of a supervising agency over the mandals. The initiation of the mandals into their new duties was undertaken by the Director personally, and it may now be presumed that the mandals of these nine mauzas have both a knowledge of their work and the ability to do it. Of a subsequent revision of their labours, Mr. Darrah writes:—"Examining the work that had been done during my absence, I found that most of it was unfinished, and a good deal of it carelessly done. Some of the maps had, however, been admirably corrected, and it became abundantly evident that want of will, and not want of ability, on the part of the mandals, had prevented most of their papers from being equally accurate."

Besides these nine mauzas of 1883-84, there was a tract of 21 mauzas, comprising 478 square miles, surveyed in 1884-85, for which the village records prepared at the time of survey were under revision in 1885-86, and will form the basis of settlement in 1886-87. The general result, in these 21 mauzas, subject to revision in making the settlement of 1886-87, is an increase of Rs. 10,493 on a revenue demand of Rs. 2,12,000; the rate of increase is 4·95 per cent. The maintenance of the village records annually in this new tract will come under the same rules as in the nine mauzas of 1883-84, upon the conclusion of the regular settlement of 1886-87, additional supervisor canungoes being appointed hereafter for that purpose; and similarly with the tract of 460 square miles cadastrally surveyed in 1885-86, which completes the cadastral area of the Kámrúp district, and will be settled on cadastral results in 1887-88.

Village records in non-cadastral mauzas.

3. The new *dág chitha* and *jamabandi* forms for periodically-settled lands in non-cadastral mauzas were explained in paragraph 3 of last year's review, and have been introduced into the Kámrúp, Darrang,

and Nowgong districts during 1885-86. They were not adopted in Lakhimpur, where the education of the mandals is very much behindhand. Sibságar was not visited by the Director. In the three districts where the new forms are in vogue, the mandals are not yet perfectly familiar with them, nor are they kept everywhere on a uniform system, but these defects will be corrected in course of time, and the general impression conveyed by Mr. Darrah's review of the work done in this respect in each sub-division is that a real improvement has been effected in these non-cadastral records, both as regards regularity and accuracy. During the current year, the new forms should be introduced in the Sibságar district, and, as far as possible, in Lakhimpur also.

Survey schools.

4. There were seven survey schools when the year began, *viz.*, at Gauháti (two schools), Mangaldai, Tezpur, Nowgong, Jorhát, and Sibságar. The Jorhát school, which was supported by the mandals themselves, proved a failure, and was abolished in May 1885. In October, the Tezpur school was closed, and that of Mangaldai, which had hitherto been kept up by the mandals, was taken over by the Government. There are thus five schools in existence now.

These schools are unquestionably doing useful work, though they can only now be said to have surmounted the difficulties and obstacles which attended their institution. All the details of the course of instruction and examination are now regulated by precise rules, and the system of rewards and fines is in operation as regards the teachers. The Sibságar school is still far behind the rest, and obviously suffers from a want of local interest, which the district officer should make it his business to remedy. The following figures show how far these schools have succeeded in meeting the demand for trained mandals and mauzadars, and how much remains to be done:—

	Kámrúp (except Barpeta).	Darrang.	Nowgong.	Sibságar (except Golághát sub-division).
Total number of mandals	270	175	187	211
Number with first class certificates on 31st March 1886.	8	9	10	3
Number with second-class ditto	119	70	65	26
Total certificated mandals	127	79	75	29
Total number of mauzadars	41	47	44	57
With first-class certificates	...	1	1	...
With second-class ditto	3	10	7	12
Total certificated mauzadars	3	11	8	12
Candidates with first-class certificates	4	2	1	3
Ditto with second-class ditto	28	12	10	2
Total certificated candidates	32	14	11	5

A new element was introduced into the course in 1885-86, by sending the schools out into the district to do actual work. The experiment proved successful in Kámrúp or which was the only district where it was properly looked after by the Deputy-Commissioner. In the current year, this part of the course should be insisted on everywhere. It will at once be useful to the mandals and an assistance to the Deputy-Commissioner, as an agency for measurement work on a large scale wherever it is needed.

Crop experiments.

Summer rice.

5. The rice crop was generally below the average in the Surma Valley, and up to the average in the Assam Valley. From 40 experiments with *aus* rice in the Surma Valley, an average outturn of 1,124lbs. per acre was obtained, against 1,130lbs. the year before, when the crop was again a poor one. *Boro* rice gave an average of 1,476lbs. per acre only, against 1,634 in 1884-85. In the Assam Valley the average outturn per acre of *áhu*, or broadcast rice, as determined by 241 experiments, was 1,332lbs., a figure which closely corresponds with the results of the experiments of the two preceding years, and which may be taken as approximately representing the productivity of the alluvial soil of the Assam Valley under this kind of crop in an ordinarily good year. The highest average (1,742lbs.) was obtained in Nowgong, where the crop was particularly good.

Winter rice.

In winter rice or transplanted rice (*sáli*) there were 44 experiments made in the Surma Valley, giving an average of 1,479lbs. per acre, against 1,442lbs. in 1884-85. The result of 57 experiments in *aman*, or winter swamp rice, in Sylhet was an average of 1,263lbs. per acre, against 2,006lbs. from 105 experiments in 1884-85; the difference speaks plainly to the injury done to this crop by last year's floods. The Assam Valley average for *sáli* rice, as educed from 395 experiments in 1885-86, was 1,719lbs. per acre, the highest figure attained since these experiments were first instituted in 1881-82. The winter rice harvest of 1885-86 was, in fact, an exceptionally good one, especially in the lower part of the valley.

In the Khási Hills the average for upland rice was only 458lbs. per acre, and for lowland rice 960lbs. Both figures are under the averages of previous years. The rainfall of 1885-86 was less than usual, and the upland rice especially suffered in consequence.

Mustard.

The mustard crop in the Assam Valley was not a good one. An average of 477lbs of mustard seed per acre was the result of 194 experiments. In the two preceding years the average had been 540lbs. The Surma Valley figures for this crop are never so high as those of the alluvial lands of the Brahmaputra, where it grows to perfection. The average obtained by 35 experiments in the Surma Valley in 1885-86 was 352 lbs. of mustard seed per acre against 365 lbs. the year before, and 466 lbs. in 1883-84.

Classified according to a first, second, or third year's crop, the experiments of 1885-86 in the Assam Valley showed that the first year's average was 475 lbs., the second year's 445 lbs., and in the third year the crop on the same piece of ground fell to an average of 377 lbs. per acre. Similar results were obtained last year. It seems plain from these statistics that the light soil devoted to mustard-growing is, in fact, easily exhausted, and that the rapid changes of occupation in *chúpari* mauzas are not dictated by mere caprice, but follow a natural law of agriculture in those tracts.

Pulse (*mátikalai*).

The year under review is the first in which experiments to ascertain the outturn of the common pulse (*mátikalai*) of the Assam Valley have been systematically undertaken in all districts. Twenty-two experiments in Goálpára and Sibságar in 1884-85 gave an average of 486 lbs. per acre for this crop. The experiments of 1885-86 were 130 in number, and the average arrived at was 504 lbs. per acre. Further statistics about this crop should be collected in the present cold season.

Sugarcane.

Experiments in cutting and crushing sugarcane and boiling *gur*, both in Sylhet and the Assam Valley, show results differing considerably from those of 1884-85 in individual districts. The weight of *gur* per acre appeared from the Sylhet experiments of 1884-85 to be 1,482 lbs., but in 1885-86 it is nearly double as much, or 2,831 lbs. In Sibságar, we have 1,035 lbs. in 1885-86, against 2,435 lbs. of *gur* per acre in 1884-85. These differences are no more than we should expect in the case of a crop which is casually cultivated, depends entirely upon the natural rainfall, and is subjected to the rudest process of manufacture. But the general results for the Province, during the past three years, diverge much less considerably, and are summed up by the Director in the statement that in Assam an acre of cane yields approximately 1,700 lbs. of *gur*; that the native sugar-mill extracts 44½ per cent. of the weight of the cane in juice, and the juice yields 17½ per cent. of its weight in *gur*, or 7¾ per cent. of the gross weight of the cane.

The Bihia mill.

These results were somewhat improved upon at a trial made of a native mill at Palasbári in Káinrúp, in competition with a Bihia cane mill. The native mill, worked by eight men, extracted nearly 50 per cent. of the weight of the cane in juice, and the *gur* obtained was 9¼ per cent. of the gross weight of cane. The Bihia mill, worked by two bullocks with three men or boys, gave 67 per cent. of juice, and 14 per cent. of *gur*, on the weight of the cane crushed. The superiority of the Bihia mill is evident; but it will hardly come extensively into use in Assam, so long as the cultivation of sugarcane and the making of *gur* remain the purely domestic industries that they are at present.

Area under different crops.

6. The comparatively small importance of the sugarcane crop in Assam is well illustrated by the crop statistics for the five upper districts of the Brahmaputra Valley, and the Eastern Duárs. Out of a total area of 1,461,291 acres actually under field crops (after deducting garden land and fallows), sugarcane occupied 20,660 acres only, or less than 1½ per cent. Pulse covered about 3½ per cent., and mustard 11 per cent. of the total area cropped. For the rest,

summer rice accounts for nearly 20, and winter rice for nearly 60 per cent. of the same area. An attempt was made to forecast the mustard crop available for export in February 1886. The calculation arrived at was that the probable export surplus of 1886 would be eight lakhs of maunds, or 588,000 cwt., and this forecast has been justified by the statistics actually registered since it was published.

Miscellaneous.

7 Among miscellaneous matters dealt with by the department in 1885-86, the most important were an attempt to prepare the way for improved cattle-breeding in the Assam Valley, and certain experiments with a view to determine the practicability of growing *muga* silk for the English market. Three bulls of the small Kenwaria breed were imported from Banda towards the close of the year, and placed in Gauháti, Tezpur, and Nowgong. Native cattle-owners will be invited to bring their cows to these animals free of charge.

As regards silk, 121 lbs. of *muga* yarn were sent to Mr. Wardle of Leek in January 1886, at an average cost of Rs. 3-11 per pound, exclusive of carriage. Mr. Wardle has not yet reported on the value of the article for the purposes of the English manufacturer. Again, 6,000 *muga* cocoons were sent to a gentleman in Calcutta who believed he had invented an improved process of reeling which would enable him to command a remunerative price for his yarn in England. The yarn reeled, however, was valued in England at a price insufficient to repay the cost of producing it in India. An experiment on a larger scale was made by the Bengal Silk Company, who were supplied with 3 lakhs of *muga* cocoons, costing Rs. 600, at the rate of Rs. 2 per 1,000; this expense was borne by the Government. These cocoons were reeled into 67 lbs. of yarn, besides 58 lbs. of marketable floss and waste. Unfortunately, the yarn was damaged on its way to England, and seems to have proved unsaleable, so that this elaborate experiment, which was designed to test decisively the possibilities of a trade in *muga*, has in reality decided nothing.

Among experimental crops, sorgho and guinea-grass grew well in Nowgong. The sorgho yielded 4½ per cent. of its weight in *gur*, and the guinea-grass proved to be a very productive fodder crop. Neither of these novelties, however, is likely to be taken up by the Assam ryot in his present undeveloped condition. The renewal of potato-seed in the Khási Hills has been taken in hand systematically. A curious feature is the persistent refusal of the Scotch Champion variety to grow in Shillong.

Two silos were made in Shillong, and will be reported on next year.

The improved ploughs, of which three varieties were tried in 1885-86, were everywhere regarded by the natives as a failure, owing chiefly to the weakness of the indigenous cattle.

Six stations for registering inter-district trade were opened at the close of the year, and the statistics collected will appear in the report for 1886-87.

Conclusion.

8. It is satisfactory to observe that reports and returns were submitted by the district officers to the Director much more punctually than last year, though there is still room for improvement. The total expenditure of the Department in 1885-86 was Rs. 50,069, of which Rs. 4,056 were the cost of the survey schools, Rs. 29,397 were spent on cadastral settlement operations, and Rs. 16,616 was the cost of the Director's office and establishment, with its contingent expenditure.

By order of the Chief Commissioner of Assam,

E. STACK,

Offg. Secretary to the Chief Commissioner of Assam.

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